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CUYAHOGA FALLS, OHIO, U.S.A.

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KOPPERS COKE OVENS

IN OPERATION OR UNDER CONSTRUCTION
IN THE UNITED STATES AND CANADA
HAVE AN AGGREGATE ANNUAL
CARBONIZING CAPACITY OF MORE THAN

42,000,000 NET TONS OF COAL

Owner or Operator	Location	Number of Ovens
United States Steel Corporation		
Illinois Steel Company	Joliet, Ill.	280
Illinois Steel Company	Gary, Ind.	700
Tennessee Coal, Iron & R. R. Company	Fairfield, Ala.	434
Minnesota Steel Company	Duluth, Minn.	90
Carnegie Steel Company	Clairton, Pa.	768
American Steel & Wire Company	Cleveland, O.	180
National Tube Company	Lorain, O.	208
Woodward Iron Company	Woodward, Ala.	170
Coal Products Mfg. Company	Joliet, Ill.	35
Algoma Steel Corporation, Ltd.	Sault Ste. Marie, Ont.	110
Inland Steel Company	Indiana Harbor, Ind.	130
Republic Iron & Steel Company	Youngstown, O.	143
Bethlehem Steel Company	Sparrows Point, Md.	360
Bethlehem Steel Company	South Bethlehem, Pa.	424
Bethlehem Steel Company	Steelton, Pa.	60
Laclede Gas Light Company	St. Louis, Mo.	56
Cambria Steel Company	Johnstown, Pa.	92
Toledo Furnace Company	Toledo, O.	94
Youngstown Sheet & Tube Company	Youngstown, O.	306
LaBelle Iron Works	Follansbee, W. Va.	94
United Furnace Company	Canton, O.	47
River Furnace Company	Cleveland, O.	204
Brier Hill Steel Company	Youngstown, O.	84
Gulf States Steel Company	Gadsden, Ala.	37
Seaboard By-Product Coke Company	Jersey City, N. J.	165
Minnesota By-Product Coke Company	St. Paul, Minn.	65
Colorado Fuel & Iron Company	Pueblo, Colo.	120
Indiana Coke & Gas Company	Terre Haute, Ind.	30
Dominion Iron & Steel Company, Ltd.	Sydney, N. S.	120
Providence Gas Company	Providence, R. I.	40
Jones & Laughlin Steel Company	Pittsburgh, Pa.	300
Rainey-Wood Coke Company	Swedeland, Pa.	110
Donner Union Coke Corporation	Buffalo, N. Y.	150
Birmingham Coke & By-Products Company	Birmingham, Ala.	50
Domestic Coke Corporation	Fairmont, W. Va.	60
Pittsburgh Crucible Steel Company	Midland, Pa.	100
		Total—6416

THE KOPPERS COMPANY

PITTSBURGH, PA.

BUILDERS OF BY-PRODUCT COKE PLANTS

THE IRON TRADE REVIEW

Vol. LXV Cleveland, July 3, 1919 *No. 1*

June Turns Steel Trade Upward

Pig Iron Production Shows Increase After Eight Months of Steady Decline—Mill Operations Keep Up Gradual Gain—New Buying is Sustained—June Pig Iron Sales Estimated at Over 1,250,000 Tons

JUNE definitely turned the tide in the iron and steel industry toward better and more stabilized conditions and the evidence of this fact grows with each passing week. Cumulative effects of the recent period of freer buying are marked not only by the steadily mounting line of production but, what is probably more important, by the apparent adjustment of consumers to present price levels. This acceptance of prevailing conditions is bringing forth a continuing movement in placing future wants under contract and in ordering out tonnage for immediate use. Blast furnace activities for June furnish another index to the upturn of the steel industry. The steady monthly decline of production dating from September, 1918, was broken and an output of 2,116,702 tons for the 30-day month is a gain of 8973 tons over May with 31 days. The June daily average was 70,557 tons against 67,991 tons in May. Steel works production gained 72,438 tons over May but merchant output lost 63,332 tons. Furnaces in blast on the last day of June were 200, a gain of 3.

General operations of the industry continue to expand and are well covered by a range of 70 to 75 per cent of capacity. Steel corporation activities are on a slightly higher plane than those of the independents. Sheet mill output now is up to 75 per cent with the leading interest scheduled at 88 per cent for next week. Tin plate and wire operations are around 80 per cent. Lapweld pipe makers continue to run full and are sold up for three to five months. Some of these producers now are refusing orders and others are scaling offered business, 50 per cent. Merchant bar operations at Chicago are estimated at 60 per cent but the situation is being helped by the inauguration of last half buying by farm implement makers.

Iron Sales Are Huge

Sales of pig iron in June based on a careful canvass are shown to have totaled in excess of 1,250,000 tons. This summary credits about 375,000 tons to Cleveland sellers; 300,000 tons to Buffalo; 200,000 to 225,000 tons to Chicago; 100,000 tons to eastern Pennsylvania and Virginia; 100,000 to 150,000 tons to the south; 40,000 to 50,000 tons to Pittsburgh and the remainder to southern Ohio and scattered districts. Probably nine-tenths of this aggregate was made up of foundry and malleable grades and necessarily the number of individual sales was unusually large. Steelmaking iron which included a 20,000-ton basic sale just made by southern Ohio furnaces for St. Louis delivery, furnished an exceedingly small proportion for so large a movement. New buying of iron now is continuing to run in a more subdued way although it still foots up a favorable tonnage weekly. The General Motors Corp. has inquired for 11,000 tons of malleable and foundry.

Take Private Armor Bids

Somewhat of a departure in matters of this kind is the taking of private bids on approximately 50,000 tons of armor plate for six battleships by the navy department. This is the largest quantity of this material ever sought at one time and is equal to 18 months' production of the three producing plants of the country.

An important order of collateral importance to the steel industry is the 300,000 to 400,000 barrels of portland cement placed with the Steel corporation subsidiaries for the approaches and viaduct of the new Cleveland union station. This is one of the largest contracts of its kind ever closed.

June, as had been looked for, made the best record of the year in structural work placed. As showing the liberal way in which work is being released, of 13,000 tons recorded as offered to independent shops in one week in June, 9000 tons were put under contract. An interesting order awarded to a Pittsburgh shop calls for 2500 tons of bridge work for the South Manchurian railways.

Chicago Base Hearing

The controversy over Chicago as a basing point for finished steel prices is to be laid before the federal trade commission for settlement. This is in accordance with the suggestion recently made by Chairman Gary of the Steel corporation to the western association of consumers which had been formed to push the latter's claims.

JULY 3, 1919

THE IRON TRADE REVIEW

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Stable Prices Before Normal Trading

WITH the war officially ended by the Versailles treaty machine tool sellers hope that by the same token a real period of industrial rehabilitation and reconstruction will have been begun formally. Spasmodic recoveries of the equipment market have been made since the signing of the armistice and sudden spurts in machine tool buying have occurred. These mostly have been confined to the automotive industries. Withal, however, promising outlooks have not developed into real business, there has been an intangible something which ever has pulled the other way. This has been shown in the postponement from month to month of a resumption of normal business. Varied solutions have been offered and discarded.

This deterrent, whatever it is, is still present. June did not come up to expectations as a tool-selling month. Industry generally, outside of the automobile trade, has not resumed its full stride. Something is acting as a checkrein. What is it? Some say labor. In some measure that may be true. But, the advertising columns of the daily newspapers prove there never was a larger demand for skilled labor. As for the labor troubles that crop out here and there, those always have been present. Apparently it is something more deeply rooted.

One likely answer to the question is prices. It is claimed that purchasing agents do not know just where they are with quotations fluctuating in an abnormal way. Dealers do not blame them; they are in a similar position. Before the war, manufacturers' agents did not know what it was to have price changes, unless an improvement in a machine increased its manufacturing cost. Sheets in their listing books were replaced only when worn out; now the sheets do not have a chance to become soiled. In some cases, new prices come before others are filed.

It is thought by some who have studied the situation that this price uncertainty is at the bottom of the unsettled condition in the machinery-using trade, at large. Buyers are not anticipating their needs, not knowing what prices will apply at the time they close.

Tool builders have been loud in their complaints against the consuming public for not being able to make up its mind. If market uncertainty is the correct answer to the procrastination in buying then it is up to these manufacturers to lead in the resumption of prewar practice by stabilizing prices. The sooner confidence in prices can be established the sooner will the country be able to realize the unusual industrial prosperity for which all signs show it is destined.

Locomotive Crane Situation Good

PERHAPS no industry, which has played a heavy part in the war, finds itself in a more healthy position at the present time than the locomotive crane industry. Unlike many of the other branches, that industry was forced to expand comparatively little to meet the war emergency. Prior to the war, the total locomotive crane capacity, figured on a 10-hour basis, was estimated at anywhere from 110 to 120 cranes a month, and although this output during the war was increased anywhere from 30 to 40 per cent, this gain was brought about more by increased operating schedules than by actual plant expansion. It is doubtful if at present capacity has been enlarged more than 5 or 10 per cent at the utmost. Therefore, it is obvious that the locomotive crane industry has an advantage over many other branches in coping with the problems of readjustment.

Another fundamental factor in the present good position of the locomotive crane industry has been the government work which has been allowed to be completed. While some of the business was canceled upon the signing of the armistice, fully two to three months' work was left on the books of most builders. As in the case of government work, a number of accumulated orders were canceled; nevertheless, enough were left to aid materially in maintaining normal production through the recent dull months.

While the disposition of government locomotive cranes still is to be officially announced, it is pretty generally conceded that they will be absorbed by the

railroad administration. That such a disposition was to be made was unofficially announced some time ago, and it is known that the government is accepting these cranes and at the same time is not offering them for sale, as has been the case in some instances with machine tools. By the disposing of these cranes to the railroads, a large buying factor partially has been taken out of the market. Nevertheless, it has afforded the locomotive crane builders an opportunity to better gage their position, and if the present rate of new inquiry can be taken as a guide, the industry will have considerable work for many weeks.

Again, while it is now impossible to state accurately the volume of new orders being placed, it is estimated that the total number of cranes booked at the present time is not under 30 a month, and in all likelihood higher. This compares favorably with the output of normal times, and in view of the rather unsettled state of industry is gratifying to most manufacturers.

Emigration Problems Must be Met

A SURVEY of the emigration situation just completed by the department of labor discloses that 1,300,000 aliens are planning to return to Europe. This number is in excess of the ordinary outgo of aliens, which will swell the total, and confirms reports that have been coming from large industrial and mining centers for weeks, that thousands of aliens are determined to get back to their native lands as soon as they can obtain passports and ships.

This development incident to the ending of the world war is certain to have a profound effect upon the labor situation and large employers are rapidly awakening to an appreciation of the fact. Because of the large number of aliens employed as common laborers in the coke regions, the coal fields, and in iron and steel plants, the problem especially is important for the iron and steel industry. A widespread shortage of unskilled labor in all probability, would result in the offering of excessive wages to attract men to this class of essential work. Such a development would increase further the present high cost of production.

How may the movement be checked? Before attempting to stay the outflow it is necessary to understand what is causing it. A number of reasons may be cited why the alien is eager to return to Europe. Among them are, his homesickness to see his native land now that the war is over; desire to look up relatives not heard from in years; belief that great opportunities exist under the new order of things and inability to realize the deplorable state of disorganization and lack of food in Europe; failure to become assimilated into American life; and false propaganda spread by unscrupulous fellow-countrymen agents of steamship lines.

In cases where family ties are drawing aliens back to Europe little can be done, but where these employes are laboring under misunderstanding of conditions abroad, or are being preyed upon by steamship agents, it would appear that there is opportunity for effective work by the employer. The big need is to impress the advantages of the United States strongly upon the alien mind. Sympathetic treatment, good wages and working conditions, and a candid description of conditions abroad as they actually exist, together with efforts to truly Americanize aliens are the means being successfully employed by some plants. One large company which has an Americanization department reports that only 30 of its employes are going to Europe. For their own good, aliens who desire to return to the unstabilized nations should be discouraged. An association of eastern employers and the Cleveland chamber of commerce have begun a study of the problem and it is probable that the government will be asked to co-ordinate a national effort to check the exodus of desirable foreign-born as well as to expedite that of those who are undesirable.

Why is Labor So Blind?

ORGANIZED labor seems determined to abolish premium and bonus systems but its efforts to demand high wages without giving value received are inconsistent and ignore the economic equation. The manufacturer of the present day faces serious problems which in the easy days of ten years or more ago were much less vital. He must pay high wages, enormous taxes, build modern plants and install up-to-date machinery or be outdistanced.

A consistent premium or bonus system whereby the honest worker is rewarded in direct proportion to his efforts aids materially in helping the manufacturer to get value received from the wages he pays. Yet organized labor cannot or will not admit the practical justice of this system. Its stand seems to be that labor must be continually employed at all hazards including the poor workman and the indifferent. The slacker and the incompetent, according to the edicts of organized labor must be paid as much as the fair-minded worker who does his best.

If organized labor were half as sincere as it pretends to be it could not advocate measures to compel manufacturers to pay the lazy and the incompetent the same wages as are earned by the honest toiler. Productive efficiency is and must remain the guiding star of industry for this country if prosperity for employer and employed is to be enjoyed and kept. If labor and capital would co-operate as partners in business this country could embark on an industrial expansion program the like of which the world has never known. On the other hand, however, if labor is so blind that it cannot see the employers' side of the question, we are bound to be seriously handicapped while more progressive nations reap rewards of reconstruction.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 66 AND 68

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	26.00 to 26.25
Basic, Buffalo, furnace	25.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25
Malleable, delivered eastern Pa.	30.00 to 31.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No 2 Southern	2.25 to 2.75
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X eastern	2.75 and up
No. 1, Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25
No. 1X, eastern delivered Phila.	$29.50 to 30.50
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 27.00
No. 2 foundry, Cleveland furnace	26.75
No. 2 foundry, Ironton furnace	26.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	28.90 to 29.80
No. 2X, eastern, N. J. tidewater	28.60 to 29.35
No. 2X eastern, Boston	31.90
No. 2X foundry, Buffalo furnace	28.00
No. 2 foundry, del. Philadelphia	27.90 to 28.80
No. 2 foundry, N. J. tidewater	28.10 to 28.60
No. 2 southern, Birmingham	25.00
No. 2 southern, Cincinnati	28.60 to 28.85
No. 2 southern, Chicago	30.00
No. 2 southern, Phila.	31.50
No. 2 southern, Cleveland	30.00
No. 2 southern, Boston	33.50 to 34.50
No. 2 southern, St. Louis	29.00
Virginia, No. 2X, furnace	26.50
Virginia, No. 2X, Philadelphia	30.60
Virginia, No. 2X, Jersey City	31.90
Virginia, No. 2X, Boston	31.90
Gray forge, valley, Pittsburgh	27.15
Gray forge Buffalo	25.75 to 26.00
Gray forge, eastern Pa.	27.50 to 28.50
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago,	44.05
Tennessee Silveries, 8%, Chicago.	44.05
Low phos. standard, Phila.	41.00 to 42.00
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	40.00
Charcoal, Superior, Chgo., last half	31.45

Coke

(At the ovens)

Connellsville furnace	$4.00 to 4.50
Connellsville foundry	4.75 to 5.25
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.00 to 6.50
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports.	115.00
Spiegel, 16 to 20 per cent furnace, spot	30.00 to 32.50
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 90.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$36.50 to 38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Youngstown	36.50 to 38.50
Bessemer, Pittsburgh	36.50 to 38.50
Bessemer, Youngstown	36.50 to 38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-hearth, Pittsburgh	$40.00 to 42.00
Open-hearth, Youngstown	$40.00 to 42.00
Bessemer, Pittsburgh	40.00 to 42.00
Bessemer, Youngstown	40.00 to 42.00

SLABS

Pittsburgh and Youngstown	39.00 to 41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, refined, Phila.	2.595c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	3.52c
Bar iron, refined, New York	2.62c
Bar iron, extra refined, Pittsburgh	2.75c
Hard steel bars, Chicago	2.45c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	35.00 to 38.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	2.45c
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.35c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c

Wire Products

(Per 100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c
Plain wire, Pittsburgh	3.00c
Galvanized wire, Pittsburgh	3.70c
Barb wire, painted, Pitts.	3.40c
Barb wire, galvanized, Pitts.	4.10c
Cut nails, Pittsburgh	4.445c
Coated nails per count keg, Pitts.	$2.75 to 2.85
Polished staples, Pittsburgh	3.40c
Galvanized staples, Pittsburgh	4.10c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	6.50c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

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Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.15c to 4.35c
No. 28, bessemer, Pitts.	4.15c to 4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.50c to 5.70c
No. 28, bessemer, Pitts.	5.50c to 5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.35c to 3.55c
No. 10, bessemer, Pitts.	3.35c to 3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1588.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

	Black	Galv.
Base, Pittsburgh	Per cent off	
¾ to 3 in., butt, steel	57½	44
⅜ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1588.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Full tube schedule page 1588.

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	$54.80
Six-inch and over, Chicago	51.80
Four-inch, New York	55.70
Six-inch and over, N. Y.	52.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.05c to 3.30c
Shafting, Pitts., carloads	28 off list

Cotton ties, lots of 1000 to 3000 bundles, $1.73½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.71½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.70c
Boiler rivets, Pittsburgh	3.80c
Rivets ⅞ in. and smaller Pitts.	65-10-5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	60-5 off
Cut thread	50-10-5 off
Larger and longer	45-10 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60-10-5 off
Cut thread	60-5 off
Larger and longer	50-10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70-10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	50 off
Gimlet and cone point lag screws	65-5 off

NUTS

Hot pressed, square blank	3.25c off
Hot pressed, square tapped	3.00c off
Hot pressed, hexagon blank	3.25c off
Hot pressed, hexagon tapped	3.00c off
Cold pressed, square tapped	3.00c off
Cold pressed, square blank	3.25c off
Cold pressed, hexagon blank	3.25c off
Cold pressed, hexagon tapped	3.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices July 2, 1919	Average prices June, 1919	Apr., 1919	July, 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	31.45	31.45	33.25	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
**Southern, No. 2, Birmingham	25.00	25.25	28.00	33.50
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa.	26.00	25.50	29.65	32.00
**No. 2X Virginia, furnace	26.50	26.50	28.45	33.50
**No. 2X, eastern del., Philadelphia	29.50	29.00	31.90	34.50
Ferromanganese, 80 per cent, delivered	110.00	114.00	130.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.00	38.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth billets, Pittsburgh	38.50	38.00	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	3.73
Iron bars, Cleveland	$2.52	2.52	2.52	3.64
Iron bars, Chicago mill	2.62	2.53	2.58	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.30	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.50	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.65	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.25	3.90	3.80	6.00
Connellsville foundry coke	5.00	4.65	4.55	7.00
Heavy melting steel, Pittsburgh	18.00	17.25	15.75	29.00
Heavy melting steel, eastern Pa.	18.25	16.15	15.90	28.50
Heavy melting steel, Chicago	18.50	16.75	16.40	29.00
No. 1 wrought, eastern Pennsylvania	24.50	22.50	21.50	34.00
No. 1 wrought, Chicago	20.00	18.70	18.50	33.50
Rerolling rails, Chicago	21.50	19.25	17.95	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Eastern Basic Sold at Advance

Market Established at $26 to $26.25 by Sales of 10,000 Tons, or 50 Cents Higher—General Sales Less Vigorous But of Good Total—General Motors Wants 11,000 Tons—St. Louis Basic Closed

Philadelphia, July 1.—Pig iron sales in this district during the past week aggregated 30,000 to 40,000 tons. Of this approximately 10,000 tons was basic sold by two makers at prices which established the market for this grade at $26 to $26.25, delivered eastern Pennsylvania. These sales leave the market considerably stronger as one of the two sellers has no more of this grade to dispose of for this year. It is figured that the minimum cost of making basic in the eastern district at the present price of raw materials is considerably in excess of $27 and in fact is nearer $28 so that higher prices of necessity are expected to be quoted as soon as old raw material stocks are worked up. A sale of 1000 tons of standard low phosphorus for export was made at $38, furnace, and about 1000 tons of copper-bearing low phosphorus was sold at $35, furnace. Some charcoal iron was sold at $29.25, Michigan furnace. The remainder of the week's business was made up of foundry iron which went at practically the same prices previously ruling. These are the equivalent to all the way from $28.60 to $30.60, delivered Philadelphia, for No. 2X (2.25 to 2.75 silicon). Most of the foundry business was divided among three eastern Pennsylvania furnaces. Only three furnaces now are operated in Virginia, Iron Gate, Max Meadows and Pulaski. The Leesport, Pa., furnace now is making foundry iron preparatory to producing ferromanganese. The Robesonia furnace will blow in shortly after July 4. It was shown at last week's meeting of the Eastern Pig association that stocks of pig iron now piled at furnaces throughout the country are much smaller than in normal times. The Pennsylvania railroad is inquiring for 3000 tons of charcoal iron. The Stanley G. Flagg Mfg. Co. is in the market for 1000 tons of foundry and 1000 tons of malleable.

New England Inquiry Good

Boston, June 30.—While it is too early to predict the effect of the signing of the peace treaty, a noticeable increase in inquiries has appeared in pig iron. Prices are firmer in all districts supplying this market and the shading noticeable a week ago has disappeared. Furnaces which made concessions to obtain backlogs are now well supplied. A Buffalo maker who has been finding good business here at $30.40 for 2X, 2.25 to 2.75 silicon, has jumped his price to $33.40. Another interest which until the end of last week was the weakest factor in the New England market, this week has refused orders at the regular market price and quotes $29.75, furnace, for 2.75 to 3.25 silicon. The larger portion of the year's tonnage from the big consumers is known to have been placed and few large orders are looked for until 1920 business starts. The aggregate of small orders, however, continues favorable. Current inquiries out are for small tonnages, several of 500 tons being reported and two of 1000 tons. The inquiry for 3000 tons noted last week evidently has been split and placed in part for last half delivery. A sale of 500 tons of 2X (2.25 to 2.75 silicon) at $28, Buffalo furnace, is reported this week. Other districts are maintaining a freight differential to equal the delivered price in many cases. One southern interest has refused to go below the so-called Redfield schedule of $26.75, furnace, for 1.75 to 2.25 silicon, and reports that all its furnaces are to blow in soon and pile the iron.

15,000 to 20,000 Tons Sold

New York, June 30.—Buying of pig iron reflected some improvement during the past week. It is estimated that at least 15,000 tons were sold and probably the total was considerably in excess of this figure. Most of the business embraced foundry iron, which went at about the same prices as prevailed a week ago. However, some of the furnaces which were quoting these prices now have advanced. Considerable eastern Pennsylvania iron has been sold at $27, furnace, for No. 2 (1.75 to 2.25 silicon), and at $28, furnace, for No. 2X (2.25 to 2.75 silicon). More Buffalo iron has been sold at the equivalent of $29 to $30, delivered New York and Brooklyn, for No. 2X (2.25 to 2.75 silicon). In general, however, Buffalo makers are inclined to ask higher prices and one interest, which a week ago was on the above basis or lower, has advanced to the regular schedule. Several eastern Pennsylvania makers are disregarding the low prices which some of the furnaces in that district are doing and are rigidly adhering to around $28 to $29, furnace, for No. 2 (1.75 to 2.25 silicon), to $30, furnace, for No. 2X (2.25 to 2.75 silicon) and to $30.50 for No. 1 (2.75 to 3.25 silicon). Much of the eastern Pennsylvania foundry sold during the past week was taken by an interest which usually makes low phosphorus. Recently this producer blew in his furnace on foundry, and is filling orders for the remainder of the year. An unusual sale was 200 tons of Alabama iron to a Connecticut maker.

This sale was not a market factor, however, since southern furnaces are unable, by reason of the freight to sell on a competitive basis in this district. The business of the week included a small tonnage of basic. Numerous export inquiries are out. One involves 10,000 tons of foundry for England and there are numerous other inquiries for foundry for that country. There also is some inquiry from abroad for hematite, but it is not looked upon seriously. It is considered likely that some of the big English inquiries for basic and foundry which have come out lately, including one lot of 20,000 tons, will result in business shortly.

Dealings Extremely Limited

Pittsburgh, July 1.—Demands for pig iron have fallen to extremely slim proportions, with almost no business whatever in the steelmaking grades. The inquiry of the American Steel Foundries for 2000 to 3000 tons of basic, has not yet progressed beyond the preliminary stage. Other inquiries for steelmaking iron are for small lots for prompt shipment, while shipping instructions against contracts, although fairly good, could be much better and still be far from satisfactory. A brokerage inquiry for 1000 tons of bessemer iron is out but a sharp cut from the regular price of $27.95, furnace, is sought on this business. Users of foundry iron appear to be well covered for the present and like steelmaking grades the bulk of the inquiries is for small lots. Blowing in of blast furnaces by some steel manufacturers points to a better market at no distant date in basic pig iron, but the assertion is still heard that increased production by the steel manufacturers is partly due to the scarcity of scrap steel. As far as prices are concerned, the market probably is better described as steady, rather than strong. While merchant producers generally are quoting full prices against all inquiries, it is believed some tonnages are being moved with brokers for slightly less than the regular quotations. The situation is better to the extent that the valley furnaces are having less competition than those of other districts. Foundries outside of those engaged in making castings for the automobile manufacturers are not crowded with business at present. It is reported that the new 600-ton blast furnace of the Weirton Steel Co., Weirton, W. Va., which for the present will be a merchant stack, is being warmed up preparatory to being blown in. The Carnegie Steel Co. still has 33 of its 59 stacks in blast.

Shipments Moving Promptly

Buffalo, July 1.—Although demand for iron has dropped off to some extent there is still sufficient tonnage to keep makers busy. Inquiries for small lots are coming in for third and fourth quarter delivery. One interest has contracted for small tonnages amounting in total to 8000 tons. Shipments on old and new contracts are moving promptly, and producers regard this as a sign that iron bought recently will soon be consumed, leading to another buying movement. Shipments are going now from Buffalo by way of the barge canal to tidewater points. Shipments of high silicon irons have been particularly good. So far as can be learned no price concessions have been made during the past week. One interest reports its total tonnage for the past week as 5000. Most of the tonnages sold thus far have been foundry iron, principally of high-silicon grade. One interest which has had two furnaces out since the armistice is considering putting them in blast shortly.

Fair Selling Continues

Cleveland, July 1.—A fair buying movement in iron has been carried forward during the past week but it falls considerably short of the activity of the several weeks preceding. Sales by Cleveland interests in the week total probably 40,000 to 50,000 tons additional. Some large producers now report that they are substantially sold up for the last half and are cutting into the tonnage previously piled. No steel making iron of consequence is included in the sales which still are made up of foundry and malleable grades. One transaction for last quarter represented 4500 tons of malleable. A Berea, O., implement manufacturer closed for 2000 to 3000 tons of foundry and is seeking an additional amount. The General Motors Corp. is inquiring for 7000 tons of foundry and for 4000 tons of malleable for last half. The American Steel Foundries which was asking for 2000 to 3000 tons monthly of basic for Alliance, O., for July-August has increased its inquiry to include a similar amount for September-October. Furnace A at Detroit was blown in last week. One of the McKinney Steel Co. stacks in this city may blow in within the next week.

Holiday Slows Buying

Chicago, July 1.—With the approach of a double holiday at the end of the week, pig iron inquiry and buying have slowed perceptibly from the rate it had been going formerly and there is a distinct lull. Another reason for the present slowness may also be found in the fact that producers have been pushing the market to some extent but are now willing to let it drift for a time as their bookings are ample. The leading producer in this district finds its sales during June exceed any other month during the present year and experience of others is practically parallel. Malleable melters continue to show more interest than formerly and two inquiries became current today for 1700 tons and 1400 tons. Foundry iron leads in activity with practically no demand for basic. One inquiry for 2500 tons of basic has been current for delivery to an Ohio plant. Among inquiries now pending are 500 tons of low phosphorus iron for third quarter, 500 tons of silveries and 1200 tons of foundry iron. A recent sale of 1800 tons of silvery iron went to a Michigan melter. Southern producers are less anxious to sell iron into this district and this department is quieter, although some sales are being made. Eastern iron is not as active as formerly and several makers formerly selling here have withdrawn.

Southern Market Growing Firmer

Cincinnati, June 30.—There has been a let-up in the inquiry for foundry iron, but some business is being transacted by nearly all selling agencies. A sale of 1000 tons of southern iron was made to an Ohio melter last week, and it is understood that the difference in freight rate was absorbed by the furnace. Southern producers, however, are not inclined to equalize freights as freely as they were a month ago, and the market in the South is much firmer. As far as can be learned no foundry iron can be obtained at $24.50, Birmingham, for any shipment, and $25 is considered minimum. The report of a sale of 20,000 tons of basic from the Ironton district to a St. Louis user has been confirmed. It is not known at what price this business was taken, but it is rumored the seller took it considerably below the regular schedule in order to meet Chicago competition. Both malleable and Lake Superior charcoal are in better demand, but sales are confined to carload and 100-ton lots. Sellers here are holding their own remarkably well, due not only to the good demand for high silicon iron, but also to the announced intention of furnaces in Jackson county to close down at an early date for repairs.

20,000-Ton Order Placed

St. Louis, July 1.—While leading consumers of pig iron have filled their needs optimism still prevails in the market. Sales during the past week have been in small lots, the largest heard of being 800 tons of 2.25 to 2.75 silicon, but the aggregate of such transactions is close to 7000 tons. This does not include the big order of the National Enameling & Stamping Co., which is understood to have been closed early in the week with the Ironton, O., furnace interest. The order involved 20,000 tons of basic, to be delivered during the last half. The inquiry for 1500 by a Quincy, Ill., stove manufacturer has been partially filled, and stove interests generally have covered on their immediate needs. This is especially true of the Belleville, Ill., foundries, which took liberal tonnages during the recent buying movement. Building operations have broadened to an astonishing degree. More structures are under way in the city than since the fall of 1914, and in the surrounding territory activities in this line are even more marked.

Southern Prices Advancing

Birmingham, Ala., July 1.—Prices of pig iron have advanced $1 and the base grade of foundry (1.75 to 2.25 silicon) has been sold at $25.25 for delivery during the third and fourth quarters of the year. For iron with 2.25 to 2.75 per cent silicon content, $26.25 is asked. No especial effort is being made to get business for last quarter delivery, and but little attention is being paid to inquiries relating to delivery in 1920. Furnace officials are very optimistic now, and reiterate their belief that No. 2 foundry will go to $30 shortly. The Republic

Iron & Steel Co. will blow in a furnace soon, in addition to two at Bessemer, previously announced. It is probable that two other furnaces will be made ready this month for operation. The third quarter begins with a large proportion of the probable production sold.

More Sales

Continue to be Made in Ore—June Shipments 7,400,000 Tons

Cleveland, July 1.—A stronger tone has developed in the ore market, most of the leading operators reporting an increase in inquiries and more sales than were made during the preceding week. Included in recent transactions were the sales of three blocks of 50,000 tons each, one of 60,000 tons and another of 75,000. The past week's business amounted to more than 250,000 tons. Formal contracts on a considerable amount of business negotiated several weeks ago were closed by one of the leading interests. The tonnage specified in one long-time contract was increased. While a better feeling is in evidence, ore men say there is room for decided improvement. They point to the fact that most of the ore sold recently is going into the manufacture of malleable and foundry grades of iron, and until more interest is shown in steelmaking grades the ore movement will not attain its full stride.

Operators of iron ore properties in Michigan have been advised of action by the tax commission of that state increasing assessments on all properties by approximately $7,000,000 and raising the total to about $116,000,000. Recommendations made by Dr. R. C. Allen, state geologist, following the filing of reports by the ore companies, considered an increase of approximately $10,000,000 over last year's assessments. The commission recently completed hearings in the principal towns on all the ranges. Some of the largest increases recommended by Dr. Allen were permitted to stand, while individual reductions from his figures amounted in some instances to as much as $400,000.

Vessel shipments of Lake Superior iron ore during June amounted approximately to 7,400,000 tons, or about 1,622,000 less than the shipments in the same month last year.

Jobbing Trade Fair

Boston, July 1.—Warehouse prices are sustained in spite of varying conditions in the finished steel market. Good business is looked for now that the peace treaty is signed and the long continued strike of local building carpenters is at an end. Some sizable building hardware inquiries are circulating and the demand for bars has perceptibly strengthened during the past week. These are going to textile machine manufacturers, toolmakers and automobile accessory plants. Demand for plates from shipbuilding interests has fallen off and the building trade in this line has not yet developed. Much new work is expected this fall. Some jobbers report increased activity in sheets for roofing purposes.

Spot Coke Prices Are Firm

Operators Indifferent at Selling at $4.25, Expecting Production to Taper Off—Car Shortage Hampering Operations

Pittsburgh, July 1.—Although blast furnace interests report no difficulty in picking up fair-size spot tonnages of standard furnace coke at $4 ovens, a number of operators having free supplies are indifferent about selling at less than $4.25, and brokerage houses claim to have paid as high as $4.40 in the past few days. The spot market may be described as firm this week, as expectations of a tapering off in production are strong. Not only are operations likely to be largely suspended over Friday and Saturday, but it is said that a good many of the coking operations are hampered through a shortage of cars. Under the car-rating scheme of the railroad administration, failure on the part of operators to report output means they will be alloted only a share of the surplus supply of cars after the distribution to those mines that have reported and made requests for cars. The contract market is holding within the recent price limits. On a sliding scale agreement, business continues to be done on a basis of 6¼ and 6 to 1, $25.75 basic pig iron, valley furnace, or $4.12 to $4.28 ovens. On six price contracts coke operators are having a good deal of difficulty in obtaining more than $4.50, ovens, although it is reported that bid of $4.35 on a contract calling for 3000 tons per month, has been refused. Operators have taken three months' contracts on a basis of $4.25 ovens. Blast furnace interests whose stacks are idle are trying to line up coke requirements to be prepared for resumption, but this sort of business does not find favor with the coke interests who prefer to have shipments begin immediately. The general asking price for standard foundry coke is $5 ovens on spot and $5.50 ovens on contract, but buyers are succeeding in bettering these prices by at least 25 cents per ton, and in some cases even more. Production of coke in the Connellsville region for the week ending June 21, is estimated by *The Connellsville Courier* to have been 131,200 tons as compared with 127,095 tons in the previous week.

Foundry Coke Goes Up

Boston, July 1.—Foundry coke in New England will advance 50 cents July 1. The Connellsville base price for July is taken as $5.50, making the New England price $9.90. This applies to contract consumers as well as for immediate delivery. Domestic coke does not take the same increase, although the New England Coal & Coke Co. states that a substantial increase will be made about the middle of July. Demand from foundries has been exceptionally large during the last few days in anticipation of a price increase July 1.

New Jersey Prices Higher

New York, July 1.—The northern New Jersey by-product coke producer has raised his price on foundry coke, effective July 1, to $5.50, Connellsville, an advance of 50 cents. Until the new price went into effect, this maker booked last half contracts at $5, Connellsville. The business booked at that price is on a flat basis and is not subject to the arrangement prevailing during the first half whereby the price was fixed at the beginning of each month to accord with the Connellsville market. The new price, $5.50 Connellsville, is equivalent to $8.60, delivered Newark and other northern New Jersey points. The New England Coal & Coke Co. is expected to advance its price on by-product foundry coke tomorrow.

Pennsylvania beehive foundry cokemakers are showing an advancing tendency. One has advanced to $5.50, ovens, equivalent to $5.30, Connellsville. Considerable last half contract business has been entered by the beehive makers during the past week at from $5 to $5.50, Connellsville, for standard brands, with considerably higher for choice brands.

Furnace Coke Advanced

Cincinnati, July 1.—The market is gaining strength and while no general marking up in prices may be noted all quotations are much firmer, especially in the Connellsville district. Furnace coke there is around $4.25 but some prompt fuel could probably be had around $4. Foundry coke is unchanged around $5.50 and while there is little contracting for future shipment, some sales of both furnace and foundry coke are being made for nearby delivery. Wise county furnace coke has advanced and is now around $6, oven, while as reported last week foundry coke in that field is held around $7.50. Very little Pocahontas coke is being shipped to this market at present, but foundry coke is quoted by producers around $6 to $6.50.

St. Louis Market Steady

St. Louis, July 1.—Dealers and consumers of coke describe the market as steady to strong, with a broadening tendency. Good inquiries in a majority of instances lead to actual buying. Melters are more disposed to cover for the balance of this year, and quite a number of contracts for the 12 months beginning July 1 have been closed. Shipments are not going along as satisfactorily as heretofore. Labor and car shortages are largely to blame, but coke also is scarce. A few plants are endeavoring to increase their accumulations. Price does not seem to be the drawback, but the leading buyers are loath to contract heavily for fuel until they know definitely about their needs.

Price Advances in South

Birmingham, Ala., July 1.—There is a better demand for coke, and beehive fuel has advanced $1 per ton. Inquiries are coming in from foundries, smelting works and furnaces, and the production is to be further increased.

Mills Take Steel Scrap

Purchases Made at $18.15 Pittsburgh and $18.75 Eastern Pennsylvania —Midvale Asks for 20,000 Tons of Borings—Market Moves Up

FOR COMPLETE SCRAP PRICES SEE PAGE 68

Philadelphia, July 1.—Scrap again reflects an upward price movement. In fact, the market is distinctly bullish, and dealers' prices as a rule are considerably higher than mills want to pay. For instance, $18.75, delivered, is the highest price paid for heavy melting steel in this market, but most dealers are holding out for $20 and $21. Wrought scrap continues dull because of the idleness of the iron mills, and foundry scrap is not much in demand, although prices on both grades are moving up in sympathy with steel. The latter shows the principal activity in the market. As a result of the Midvale Steel & Ordnance Co.'s recent inquiry for 5000 tons it had good offerings and bought at $18.75 a ton two to three times as much as it sought. The company now is inquiring for 20,000 tons of blast furnace turnings for the Cambria Steel Co., and is willing to pay $12.

Boston Prices Advancing

Boston, July 1.—The scrap market is stiffening rapidly. No. 1 machinery which has hovered around a cent a pound has advanced to $24 per gross ton, on which basis sales were made last week. Nearly all other grades are firm or advanced. Heavy melting steel has sold for $14, while $13.50-$14.50 probably represents the market. The manager of a large local scrap firm visited New York, Philadelphia and Pittsburgh furnace districts last week and found conditions so encouraging that he wired his house not to sell steel scrap under any conditions. Most dealers are holding their stocks in anticipation of higher prices. Much steel scrap is stored in New England as prices offered by open-hearth furnace interests are not sufficient to move it. Foundry sorap for local consumption continues in good demand but prices have remained practically unchanged. Bids on government stock of shell forgings at Orange, Mass., were rejected as too low, although one bidder offered $15.09 per gross ton. Bids on the same class of scrap elsewhere have exceeded market quotations.

Heavy Melting Steel Going Up

New York, July 1.—Prices of heavy melting steel scrap are moving rapidly upward, and $20 seems assured according to dealers. It is understood that some of the Coatesville consumers have already paid $19, delivered. Sales for shipment to the Pittsburgh district have been reported here at $15 and $15.25, f.o.b. New York. Demand is becoming more general. Borings and turnings also are moving in sizable quantities, although buying is still confined principally to one large eastern Pennsylvania consumer. This material also has advanced. Railroad wrought is stronger, with the market up about $1. While trading in cast scrap involves only fair tonnages, prices are up about 50 cents. Various odd lots of government scrap continue to come out. The 2000 tons of mixed scrap at the Morgan, N. J., shell loading plant went to Briggs & Turivas, at $20.36. This company also was low bidder on approximately 260 tons of high explosive shell forgings at Boston, at $17.631, f.o.b. cars. Another lot of shell forgings at Boston went to the Brier Hill Steel Co. at $17, f.o.b. cars.

Mills Paying Higher Prices

Pittsburgh, July 1.—Scrap iron and steel prices recently established by the bids of dealers either to cover sales or on speculation are beginning to be backed up by sales to the steel manufacturers. Sales of heavy melting steel as high as $18.50 have been made to some of the steel companies, but as yet the Carnegie Steel Co., has not paid that price. In fact, it has not raised its price limits of $16 to $16.50, and these prices, being $2 to $3 a ton below those of the dealers', it is not getting any acceptances. While the improvement in finished steel has prompted more interest on the part of consumers, actual business still is of rather moderate proportions and seems to be confined largely to heavy melting steel and similar grades. No lack of confidence in ultimately higher prices is observed among dealers, but while paying big prices to the government for shell steel, it is noted that they are not throwing down large tonnages of other kinds of material at current prices. Bundled sheets are reported to have sold at point of origin at $14.50 to $15, baled sheets at $16.50 to $17 and sheet bar crops at $22. Iron and steel foundries are buying much scrap and so many blast furnaces are inactive that borings and turnings are not much sought. Rerolling rails are in good demand and while $22 is as high as any recent business has been done, it is hinted that this price would not be attractive to those now holding supplies.

Little Demand at Buffalo

Buffalo, July 1.—Demand for scrap has fallen off. Local mills have not been in the market in this territory since the armistice, the demand having come entirely from outside sources. Dealers are practically the only interests trading, and they are buying freely. It is generally believed that local mills are stocked up for three or four months.

Steel Sells at $19

Cleveland, July 1.—Unexpected strength has marked the Cleveland scrap iron and steel market, the last few days. Early last week the market was uncertain with a slight tendency toward weakness. Some dealers claimed to see in this the effects of the seasonal dullness. But toward the close of the week consumers who had scoffed at $18 steel were displaying more interest. Some heavy melting steel in fact has been sold for $19 in this market, and there are reports that $19.50 has been done in a nearby district. Dealers are most active, and are willing to pay $19 for melting steel to cover contracts, where a few days ago offers of $18 and $18.50 was sufficient. Trading the past week has been in fair volume. Turnings and borings, to a degree, have reflected the increased strength of melting steel.

Chicago Buying Heavier

Chicago, July 1.—Much better feeling is in evidence in the scrap iron and steel market in Chicago than has been the case for some time and practically all consumers are buying more or less material. Prices have been advanced steadily at 50 cents to $1 per week and in some grades even more rapidly. Consumers are coming to the front to cover their requirements before the top is reached. It is doubtful if a heavy tonnage of steel or other scrap could be placed at present as dealers are not selling under present conditions. Such scrap as was laid down earlier in the year for a rise is being held tenaciously for the higher price which all dealers believe will come soon and this is helping to make the situation strong. In spite of government offerings, much of which is not scrap, the supply is not equal to demand and the market is absorbing everything readily. The Chicago, Milwaukee & St. Paul offers 1300 tons and the Chicago, Burlington & Quincy 350 tons. The ordnance department offers 3197 tons of forging billets and 95 tons of hand grenade castings.

Cincinnati Quotations Marked Up

Cincinnati, July 1.—Quotations on practically every grade of scrap have been advanced and there is a much better demand both from steel mills and foundries. Heavy melting steel and malleable scrap are in better demand than for a long time. There also is a good call for No. 1 railroad wrought.

St. Louis Prices Advance

St. Louis, July 1.—Prices of scrap have advanced again, increases during the past week ranging from 50 cents to $2.50 per ton. The upturn was due principally to the continued speculative enthusiasm among dealers, but several of the larger consumers were in the market for relatively sizable tonnages. The demands were filled, and the interests have again withdrawn from the market, leaving matters entirely in the hands of dealers. The latter are now buying everything in sight. Recent increases in prices make a favorable showing on paper, but the difficulty just now seems to be in realizing, as the industries here are not disposed to meet current quotations, and prices offered by eastern consumers are no better. The National Enameling & Stamping Co. was in the market for a heavy tonnage of steel, borings and turnings, and it is generally understood to have purchased a large quantity of this material at high figures. Dealers

who were speculating on this order raised prices virtually $1 a ton. Several dealers having tonnages of steel laid down are refusing to dispose of it at less than $20, although $18 to $18.50 is the best consumers are willing to pay. One interest with upwards of 1000 tons of rerolling rails in its yards is asking $22, but this figure is not obtainable. Cast iron is scarce and in demand.

Track Work

Wanted by Bulgaria and Other Foreign Buyers—Railroad Orders Few

Cleveland, July 1.—Various lots of railroad steel for export are being figured in this district. A recent inquiry from Bulgaria called for 2000 to 3000 tons of light rails and fastenings for track work. Several lots aggregating 1000 tons of similar material are pending for another foreign destination.

Rail Mills Not Pressed

Pittsburgh, July 1.—Current demands for standard rails are not proving much of a tax upon mill capacity. A fair amount of export business is on the books of the Carnegie Steel Co., which also is rolling its quota of the 200,000 tons recently placed by the railroad administration. The combined business, however, is only sufficient to keep busy one of the two standard mills of the Edgar Thomson works. It is said the Mexican government is planning construction of 1500 miles of new railroads, but inquiries have not developed. Fair inquiry is noted for light sections especially for export, but actual bookings are few. Orders for standard spikes seem to be waiting on delivery of rails recently placed by the railroad administration. Jobbers continue to stock up on light spikes. Prices of splice bars and bolts are holding firm, but price cutting continues in light rails, while it is said freights are being absorbed by some makers of spikes.

Military Cars Released

Chicago, July 1.—The Pullman Co. has received a release on 523 additional military cars for use in France. It is said this release will be the last and that all other cars remaining on the original purchase have been canceled. No other car buying is being done and the inquiries for cars for Poland and Chile still are pending. Railroads are practically out of the market on iron and steel products except for some track fastenings to take care of rails recently bought. Demand for light rails is slack except for some business coming from foreign countries.

Plates Look Better

Pittsburgh, July 2.—The situation in plates is looking better. One maker recently had an inquiry for about 50,000 tons of ship plates. The buyer, however, offered about 2.40c, base Pittsburgh, but the bid received no consideration. A price of 3c, Pittsburgh, was quoted against 10,000 tons of this business. A car builder recently closed for more than 2000 tons at 2.65c, Pittsburgh.

Sheet Production Rising

General Operations Now Up to 75 Per Cent—Leading Maker Schedules 88 Per Cent—Prices Seem Firmer

Youngstown, O., July 1.—Sheet mills in this territory now are well booked with orders. Demand for galvanized is heavy now that the building trade is consuming good-sized tonnages of both corrugated and roofing products. A good demand exists for black and blue annealed and few gaps in the rolling schedule exist for these grades under a three-week delivery. A good business is being done in highly-finished sheets. At present six mills at the only valley plant rolling this grade are operating. Heretofore, only four of these mills were active. Some of the orders under schedule now by certain valley makers were closed a few weeks ago at slight concessions but it is doubtful whether any tonnage could be obtained now at other than full market prices. The recent concessions were made on spot business only to swell production. Business came out more plentifully last week which resulted in a more regular mill schedule. With the usual yearly shutdowns at hand, practically all valley makers are filled until nearly the end of July. Several producers are declining to quote on certain material and are picking their specifications. An inquiry for approximately 800 tons of Nos. 30 and 31 black is before valley mills. A few makers are sending out lists of accumulated stock and in some cases the attached notification reads "Quotations at base prices" while in other cases it states "The maker is in a position to name an attractive price."

Chicago Mills Well Sold

Chicago, July 1.—The leading independent manufacturer of sheets in this market is unable to sell for delivery before fourth quarter and has taken some contracts for that period at the full price. Business for this delivery is not being sought, but customers desiring fourth quarter tonnage are being accommodated, and without concessions. It appears that occasional shading of price is still being done by some eastern interests.

Less Cutting of Prices

Pittsburgh, July 1.—Not only is the market in sheets still showing marked activity but prices are considerably firmer. Most of the manufacturers who recently were making concessions have become filled up and no longer are anxious for business except at the March 21 levels. Cutting of prices of galvanized sheets has been especially severe and is explained by the fact that one company that recently took a considerable tonnage at 5.50c, Pittsburgh, some years ago when the price of spelter went up so rapidly dropped its contracts for galvanized sheets. It has recently set out to re-establish its trade and has offered low prices. Manufacturers generally are well booked in black, galvanized and blue annealed sheets, some being sold from 60 to 90 days ahead. A meeting of the independent sheet manufacturers is scheduled for today at Mansfield, O. It is believed the meeting will consider the recent wage scale agreement and the contract with the unions. Independent mills now are running at better than 75 per cent of capacity and the schedules of the American Sheet & Tin Plate Co. are on about the same scale. Schedules of the latter for next week call for 80 per cent operations.

Orders Refused

In Lapweld Pipe by Filled Mills—Deliveries far Back

Pittsburgh, July 1.—Demands for lapweld pipe in connection with the oil boom still are on an enormous scale, and even though manufacturers are running their lapweld plants 100 per cent they are daily falling behind. New business either in oil or line pipe is not getting much consideration, so heavily booked are the manufacturers. An inquiry from an oil well supply house for 234 miles of 8-inch line pipe for shipment to Oklahoma is before manufacturers. In fact, in the aggregate probably more than 500 miles of 6, 8 and 10-inch line pipe are sought. The Sinclair Consolidated Oil Corp., is building an 8-inch pipe line from Healdton, Okla., to Burkburnett, Tex., and is said to be planning an 8-inch line from Healdton to Cushing, Okla., to parallel its present 6-inch line. In their lapweld departments manufacturers are sold from three to five months ahead. So urgent is the demand that they are unable to guarantee the usual protection to regular customers. As a matter of fact, new business, even from old customers, is being scaled to about 50 per cent of the tonnage asked for.

Eastern Prices Firmer

New York, July 1.—Sellers of cast iron pipe in the East state that prices are now somewhat firmer. They assert that there still is some shading being done, but that instances of this sort are fewer. While there is little municipal inquiry, demand from private sources continues to come out in fairly good volume. Included in recent awards are 1100 tons of 36-inch pipe for Hartford, Conn. This business was placed with the Warren Foundry & Machine Co.

Maker Refuses Business

Youngstown, O., July 1.—So heavy is the demand for lapweld pipe that one large maker in this district is refusing business. Most of this grade is being shipped into the oil country and the demand continues heavy. The demand for standard-sized pipe is improving, the building trade consuming good sized lots. Some good business for buttweld was taken this week.

Implement Trade Buying

Farm Tool Interests Place Last Half Business at Chicago and Cleveland —Reinforcing Steel Active—Barges Require 4500 Tons

Chicago, July 1.—Agricultural implement makers are in the market for some tonnage of soft steel bars but are buying conservatively and orders are considerably less than usual for these interests. General business is taking steel bars at about its usual rate and mills are operating close to 60 per cent as a general average. Inasmuch as the railroads are taking nothing, this seems to be as much as could be expected, as normal railway requirements usually take care of at least 40 per cent of production.

Hard steel bars are being contracted for by agricultural implement makers and one mill which has been down for several weeks will start up immediately after July 4, with an order book sufficient to give operation for some time. Some inquiry is being received from reinforced concrete builders but this has not yet become actual business. General manufacturers are taking more or less hard steel bars and angles.

Bar iron is slack. Occasional tonnages are being taken from railroads, though in much less quantity than usual. It appears that all mills in this district are holding firmly to 2.62c, Chicago mill, with one exception and this maker is expected to fall into line shortly.

Eastern Business Active

Philadelphia, July 1.—Steel bar orders continue coming in actively. All bar mills are operating full and have enough tonnage ahead to keep them busy for weeks. Considerable contracting has featured the past week. Further shading on bands is reported. This consists of selling bands on the bar schedule. Continued idleness of the Lebanon mills by reason of a strike keeps the iron bar business at a minimum. Makers report some improvement in bolt, nut and rivet demand.

Business Could Be Better

Pittsburgh, July 1.—Lack of railroad buying and the fact that the makers of agricultural implements are not yet covering freely more than offset rather generous demands for merchant steel bars from the automobile manufacturers and the liberal specifications from the makers of shafting. While a fair amount of business is being done, it could be considerably better and still not crowd the mills. However, most manufacturers are better provided with orders than they were a short time ago and practically no shading of the regular base of 2.35c, Pittsburgh, now is noted. Makers of iron bars are fairly busy and report that while orders individually are not large, they are fairly numerous. The plant of the Pittsburgh company is closed down this week for repairs. Makers of extra refined bars are adhering firmly to a base of 2.75c, Pittsburgh, claiming that a lower price is not possible. Inquiries for concrete reinforcing bars are numerous, both by consumers and by the jobbing trade. Orders from the latter source have shown a notable gain in the past week or so. Makers of rerolled bars are quoting 2.35c, mill, against all new business, but as yet 2.25c, mill, appears to be the maximum. Hard bars from new billets are firmly priced at 2.35c, base Pittsburgh, with the usual extras for twisting and deforming.

Implement Makers Placing Orders

Cleveland, July 1.—Implement manufacturers in this territory now are placing contracts for soft and hard bars and small shapes for last half. Several tonnages of this character have been closed and others are pending. These interests are paying the full price of 2.35c, Pittsburgh, on soft bars, and on hard bars have been quoted to 2.35c, mill, for third quarter to 2.35c for fourth quarter. In one case 2.30c, mill, for last half was named. Miscellaneous bar buying is going along steadily. Some members of the jobbing trade have placed contracts for round tonnages for stock. Specifications are more active in all directions, and the past week has been one of the best in this respect shown in a long time. Demand for reinforcing bars is lively. An inquiry for 4500 tons and 30 concrete barges for the railroad administration is being figured upon by local builders. For the Bamberger-Reinthal Co. knitting mill, 1000 tons are wanted. Other jobs include 300 tons for a bridge at Niles, O., for which the Walsh Construction Co., has the general contract, and 200 tons for the Crown building, this city. The 800 tons for the city sewage disposal plant are being closed and 300 to 400 tons for the Rivitz building, this city, have been placed with a Pennsylvania mill.

General Demand Growing

Chicago, July 1.—Buying of nuts and bolts is excellent on the part of general consumers and jobbers are also taking considerable material to replenish their stocks. Some makers who specialize in automobile bolts are operating at full capacity, while others not equipped to handle this business are running about 70 per cent.

Foreign Inquiries Heavy

Cleveland, July 1.—Foreign inquiries for nuts, bolts and rivets are more numerous and larger. French consumers are asking for 200 tons of hexagon nuts to be delivered monthly over a period of one year. One large maker is reported to have received an order from overseas for approximately 100,000,000 nuts and bolts and now is at work upon it. Specifications continue to come in freely from both jobbers and users and the tone of the market is increasingly strong, even in the absence of railroad business. Prices generally remain strong. A leading local manufacturer has withdrawn all prices as of July 1, the inference being that an advance will be announced in the near future.

Specifications Are Heavy

Pittsburgh, July 1.—The last week of the second quarter of the year found a great many buyers of nuts, bolts and rivets who have not forwarded shipping instructions, and the past week consequently has been marked by a rush of specifications. Automobile manufacturers are free buyers of bolts, and demands from other sources, except railroads, also are on a fairly heavy scale.

Business is Better

Pittsburgh, July 1.—Demand for hoops and bands especially for the narrower widths has been good in the past week, and mill operations are on a heavier scale.

Liberal Sales

Of Ferromanganese at $110 Continue —English Makers Reduce to $115

Philadelphia, July 1.—Domestic producers of ferromanganese here sold several thousand tons additional at $110, delivered, for 80 per cent. This business involved tonnage previously offered and on which there was some delay in closing. Now the minimum at which domestic will sell is $125, delivered.

Spiegeleisen reflects a firmer tone. Some makers are quoting a minimum of $35 furnace, on 18 to 22 per cent for any position. It is more difficult now to buy spot at less while this seems to be the absolute minimum on futures. Among current inquiries is one for 1000 tons and one for 1500 tons.

An unusual inquiry is for 1000 tons 10 to 12 per cent spiegeleisen believed to be for Holland or Belgium. Ferrochrome containing 6 to 8 per cent carbon now may be had at 30 to 35 cents for all position. Demand is quiet.

English Price Reduced

New York, June 30.—Following the reduction in the domestic price on 78 to 82 per cent ferromanganese from $125 to $110, delivered, an English maker has reduced from $121 to $115, c.i.f. This price is equivalent to around $119 to $120, delivered, and it probably is on a parity with the minimum at which domestic producers now would sell. During the past week several additional sales of standard ferromanganese running into thousands of tons were made at $110, delivered, but the producers now claim that higher would have to be paid for additional lots. New inquiry at the present time is not very active.

Demand for spiegeleisen is showing considerable improvement. There are numerous inquiries out involving up to 500 tons each. The prices asked are higher for the future than for spot shipment. On round lots for spot and nearby shipment, the makers now are asking $31 to $32, furnace, for 19 to 21 per cent metal, whereas on forward delivery there now is a tendency to ask as high as $36. Sales

of spiegeleisen during the past week have been moderate.

Several round tonnages of bessemer ferrosilicon have been sold during the past week for third quarter at prices which are withheld.

Ferromanganese Prices Erratic

Pittsburgh, July 1.—Prices of 80 per cent ferromanganese continue to move erratically. At last accounts this material was quoted at $110, delivered, by domestic producers but at least a couple of times during the week they have quoted $125. Passing of resale tonnages and a material increase in the demand was followed by a reduction from $125 to $110. Having closed on about 5000 tons at this price, makers withdrew and named $125. No business having been possible at that figure, the quotation then dropped back to $110.

A stronger market appears to be developing in electrolytic ferrosilicon, some speakers quoting 50 per cent metal at $90, furnace, freight allowed in bulk and $95 packed. Inquiry has improved appreciably in the past week or two, but as yet prices higher than $85 find little basis in sales. On actual sales the market still is quotable on new material at from $80 to $85, freight allowed. Small resale lots recently have been sold for considerably less.

Offerings of English ferrotungsten by the imperial munitions board at $1 per unit, delivered at Atlantic seaboard, have occasioned considerable uneasiness on the part of domestic producers. This English material is said to contain impurities, but the price is 25 to 30 cents below that asked by domestic makers.

A good many inquiries are coming out for ferrovanadium but so much of current production is going to meet contract obligations that almost no free metal is available. Ferrovanadium is moving on contracts anywhere from $5 to $6 a pound but brokers are unable to obtain supplies even at a substantial premium over those figures.

Ferro Tonnage is Closed

Cleveland, July 1.—Buying of ferromanganese for last half shipment by steelmakers in this territory has continued and recent sales are estimated at from 4000 to 5000 tons. A Canton, O., interest bought 1000 to 2000 tons, and a Youngstown plant is understood to have closed for 1200 tons. A local steelmaker also was a buyer of several hundred tons. All of this business was placed at $110, delivered, for domestic 80 per cent.

Sold on Low Level

Chicago, July 1.—A local representative recently placed between 1500 and 2000 tons of ferromanganese in the Chicago district at $110, delivered, before this price was withdrawn and $125 restored. Ferrosilicon 50 per cent is steady and resale material formerly disturbing the market seems to have been absorbed. Spiegeleisen is firm at $35 and resale is no longer evident. An exception to this statement is that the government has a lot of 500 to 600 tons in the St. Louis district which will be offered shortly.

Ship Plates Are Placed

Carnegie Steel Co. Reported to Have Tankship Tonnage—Chicago Mills Get Orders From Pacific Coast Yards—Market Quiet

Philadelphia, July 1.—Several thousand tons of steel for tank ships to be built for the Sun Oil Co. by the Sun Shipbuilding Co. are reported to have been placed with the Carnegie Steel Co. This is the only important development in the eastern plate market although one large sale for vessel construction is reported from another district. Eastern makers declare that the plate market from the general standpoint now is duller than at any time since the armistice. Nothing yet has resulted from the pressure being brought by the shipbuilders upon the Emergency Fleet corporation to declare the government's needs in yard capacity for its program so that the builders may determine to what extent they can accept contracts for private work.

Little Better Feeling Noted

Pittsburgh, July 1—Although business in plates continues of extremely moderate proportions, most manufacturers report better inquiry and a fair amount of tonnage moving to makers of oil and gas tanks. Pipe mills are taking some tonnages of grooved and universal plates for the larger sizes of tubular goods. Efforts on the part of buyers to secure concessions have been unavailing. At the same time talk of an early advance is not nearly so general nor so strong here as it seems to be in the East. Suggestions of higher prices seem to be coming chiefly from the independent companies. Some of the independent companies have a considerable tonnage of plates held up by the suspension of contracts by the Emergency Fleet corporation, but as a general proposition mills in this district have no considerable amount of advance bookings.

Mills Need Orders

Chicago, July 1.—With greatly enlarged capacity for producing steel plates, the mills have not nearly enough business on their books to insure comfortable operations. Present business is far from sufficient to give efficient operation. Builders of tanks are taking fairly large tonnages, especially those supplying storage tanks for oil. Boilermakers are not busy. Most demand outside of tank work is from miscellaneous sources. One interest finds the demand is increasing somewhat and recently was unable to take some business because desired delivery could not be made. Buyers seeking plates for export are asking concessions and apparently do not understand the present situation. The leading interest has finally received specifications for steel for two ships being built on the Pacific coast which were released recently. This involves about 4800 tons of plates and about 3000 tons of structural steel. It is understood other ship releases probably will be made during the summer.

Wire Advance

Fails to Take Place July 1—Mills Are Well Booked

New York, July 1.—The advance in wire prices which was expected in some quarters did not materialize. There is a possibility that wire prices may be advanced later in the last half. It now is thought as improbable that there will be any advance for at least another month. There is considerable disappointment on the part of some manufacturers at the failure of prices to advance. This is particularly the case with regard to the wire nail price, which some makers say does not cover their cost. New business in wire products continues to be entered at a satisfactory rate, and in most cases, in fact, the mills are taking on new business faster than they are shipping. It is to be doubted, however, whether any of the mills now are operating at more than 80 per cent of capacity.

Higher Price Talk Strong

Pittsburgh, July 1.—Although the attempt of one independent company to obtain higher prices on export orders for nails and wire has not yet been successful and rumors are current that one of the export combinations has been accepting business at less than 3.25c, Pittsburgh, talk of higher prices still is strong here. In fact, it was expected that announcement of an advance might be made this week, but apparently the leading interest is not yet ready to take this step and the independent manufacturers are waiting. Demands still are large and urgent and all makers have become so well sold ahead that they are indifferent about new business except from regular customers at current prices. Current specifications continue to run considerably in excess of present operating capacity and some manufacturers are worried that they sold so far ahead.

Jobbers Stocking Up

Chicago, July 1.—Demand for wire and nails is unusually active, with jobbers buying for stock. For several months prices appeared high and most wholesalers feared to lay in a stock for fear of a decline. The situation has been thoroughly sifted out in recent weeks and the impression is strong that present prices are here to stay and orders are being received for future delivery. This usually is a dull season in the wire market but these circumstances have brought about a reversal of the rule. It seems almost certain that an advance will be made before long. Jobbers hold this opinion and are seeking to obtain contracts before this event takes place.

New Lettings Keeping Up

June Record Remains Favorable—Chinese Bridge Work Closed—Big Chicago Building Projects Estimated Will Require 15,000 Tons

Pittsburgh, July 1—While demands for shapes are not of sufficient size to bring about any material increase in mill operations, structural inquiries and lettings continue to grow and fabricating shops now are busier than they have been at any time before this year. Lettings in the week ended June 21, according to reports to the bridgebuilders and structural authorities, come within a few thousand tons of the tonnage sought. The approximate figures were 13,000 tons up for bids and 9000 tons let. While not much improvement has yet developed in the prices of fabricated material, the fact that so many of the shops are now fairly well off in the matter of business has materially reduced competition on new jobs and the market is not nearly so much in the buyers' favor as it was recently. Among recent awards was one for 2500 tons for bridges for the South Manchurian railway which went to the McClintic-Marshall Co, being placed through Matsui & Co. The former company also is the low bidder on 3500 tons for ship ways at the Brooklyn navy yard. Plain material is firmly priced by all manufacturers. The McClintic-Marshall Co. has divided the 4000 tons of steel for the new plant of the Kelly-Springfield Tire Co, Cumberland, Md., between the Jones & Laughlin Steel Co. and the Bethlehem Steel Co.

Nothing is known at the main offices of the McClintic-Marshall Co. here about the large contract reported to have been taken by that company in conjunction with the Vulcan Steel Products Co. Although the company has a representative in France and has an export branch in New York, no word regarding the company's participation in the reported contract has been received here from either source.

Awards Keeping Up

New York, July 1.—Activity in the local structural market is being well maintained. Fabricators report a good volume of inquiry, involving both large and small tonnages, and a considerable amount of business continues to be placed. As a result, fabricators are showing less tendency to shade prices. There continues, however, a great lack of railroad demand, the last important inquiry of this description from the Boston & Maine railroad several weeks ago for 1800 tons, and this business still is pending.

Bids have been submitted recently on several navy yard jobs. M. H. McClosky, Philadelphia, was low on 1700 tons for an assembly shop addition at the League Island navy yard, and also on 300 tons for a pattern shop. Levering & Carrigues were low on 1500 tons for a structural shop at the Boston navy yard. This company was also low several hundred tons for a government power house at Indian Point. It has been announced through the local offices of the American Bridge Co. that the company has been formally awarded the steel contract for the new office building of the General Motors Corp. at Detroit. About 14,000 tons are involved.

Awards Coming Slowly

Philadelphia, July 1.—Discouragement is reflected in some corners of the structural market here over the failure of many projects now on the boards to materialize. A great amount of work has been figured lately but is not being awarded very fast. The only lettings of the past week were small. The largest was a small tonnage to the Pittsburgh Bridge & Iron Co. for trinitrotoluol buildings at Fort Mifflin. One eastern shape mill having faith in the future, now is rolling tonnage for stock.

Viaduct Steel Needed

Cleveland, July 1.—About 2500 tons of steel it is expected will be needed for viaduct work in connection with the new union station, this city, for which some large contracts for construction material have just been let. This steel is not likely to be needed, however, for several months. Fabricators in the Cleveland district declare that the time has arrived to stop making sales below costs and as a result an upward movement of the price curve is freely predicted. Reluctance of fabricators in this district to submit bids upon a certain important inquiry because the price expected by the inquirer was too low, is cited as indicating how far this feeling has developed. As business expands in number of inquiries and volume of awards, fabricators are disinclined to go after business, they say, to obtain which would mean diving beneath costs. The 2500 tons of plain material for bridge work for the Nickel Plate recently placed will be furnished in considerable part by the Bethlehem Steel Co.

Structural Buying Less

Chicago, July 1.—With most large tonnages of structural material placed with fabricators, the market in the west is somewhat quieter than has been the case for several weeks. Mills and fabricators now are provided with considerable business. A recent inquiry asks about 1500 tons of tank material for the Beacon Oil Co., Boston, the Leonard Construction Co., of Chicago, asking bids. A large tonnage is expected late this year on a new building for the combined Merchants Loan & Trust Co., and the Illinois Trust & Savings bank at Chicago, which is estimated at 15,000 tons. The new building for the Federal Reserve bank of Chicago promises also to furnish a large tonnage. Neither of these buildings is yet planned. The Scullin Steel Co., St. Louis, has awarded 1314 tons for a rolling mill building to the Christopher & Simpson Iron Works, the Banner Iron Works and Stupp Bros. Bridge & Iron Co.

CONTRACTS AWARDED

Addition to Pierce-Arrow plant, Buffalo, 200 tons, to Ferguson Iron & Steel Co.

Plant addition for Federal Sugar Refining Co., Yonkers, N. Y., 700 tons, to American Bridge Co.

Office building for Chicago Pneumatic Tool Co., New York City, 600 tons, to the Hedden Iron Construction Co.

Theater building at Wilkesbarre, Pa., 300 tons, to Bauman Iron Works.

Twelve storehouses for Marine Corps, Quantico, Va., 500 tons to McClintic-Marshall Co.

Bridges for South Manchurian railway, 2500 tons to McClintic-Marshall Co.

Steel mill buildings for rolling mill for the Scullin Steel Co., St .Louis, 1314 tons, to the Christopher & Simpson Iron Works, Stupp Bros. Bridge & Iron Co. and the Banner Iron Works.

Beam spans for the Minneapolis Bridge Co., Norman and Clay counties, Minn., 138 tons, to the American Bridge Co.

Building for Northwestern Telephone Co., Minneapolis, 2500 tons, to the Minneapolis Steel & Machinery Co.

Extension to the plant of the J. P. Devine Co., Buffalo, 200 tons, to the Lackawanna Bridge Co.

New automobile factory building, Nordyke-Marmon Co., Indianapolis, 400 tons, to Fort Pitt Bridge Works.

Addition to Peerless Motor Co., Cleveland, 100 tons, to Van Dorn Iron Works.

Federal reserve bank, Dallas, Tex., 1200 tons to Mosser Mfg. Co.

No. 2 Telephone exchange, New York City, 950 tons, to Bethlehem Steel Co.

Apartment house West Thirty-fourth street, New York, 1100 tons, to Heddon Iron Construction Co.

CONTRACTS PENDING

Addition to New York stock exchange, 500 tons, contract pending.

Addition to assembly plant, League island navy yard, 1700 tons, M. H. McCloskey low bidder; also 300 tons for pattern shop.

Structural shop at Boston navy yard, 1500 tons. Levering & Garrigues low bidders.

Government power house, Indian Point, several hundred tons. Levering & Garrigues low.

Shipways for Brooklyn navy yard, 3500 tons; McClintic-Marshall Co. low bidder.

Leonard Construction Co., Chicago, oil storage tanks, 1500 tons, for Beacon Oil Co., Boston. Bids asked.

Building for Youngstown Steel Car Co., Niles, O., about 500 tons; bids asked.

Administration building for National Malleable Castings Co., Cleveland, 500 tons; bids asked.

Assembly building, Philadelphia navy yard, 1600 to 1700 tons, revised bids being taken.

Garage for B. Altman & Co., West Thirty-sixth street, New York, 900 tons, bids being taken.

Garage for George Keen, Inc., West Thirty-seventh street, New York, 350 tons, bids being taken.

Will Add Mill

Chicago, July 1.—The Interstate Iron & Steel Co. will add at its South Chicago plant a 75-ton open-hearth furnace and continuous bar mill and will rearrange trackage system. It also will install a scrap-handling system to be equipped with cranes. Counselman & Co., Chicago, have taken $7,400,000 seven per cent preferred stock to finance the work and will offer this for sale.

Liggett & Drexel and Knauth, Nachod & Kuhne, New York bankers, are taking subscriptions for stock in the new Clinton-Wright Wire Co., Worcester. This stock initially is being offered at $36 a share.

Good Orders

Keep Semifinished Makers Comfortable —Sheet Bars, Rods and Skelp Active

Pittsburgh, July 1.—With makers of sheets and tin plate running their mills on a steadily increasing scale, demands for sheet bars continue to grow. Tin plate mills are running now close to 80 per cent of capacity and the sheet mills rapidly are approaching that rate. Thus far, the nonintegrated manufacturers have been able to cover their requirements at their regular sources of supply and middlemen have had comparatively little chance to do any business. While the bar mills are busier than they were recently and orders are coming forward more freely with the makers of strip steel, specifications for billets are not particularly heavy, although they are much larger than they were three or four weeks ago. Offerings of skelp are extremely scant owing to the huge demands for pipe. One independent steel manufacturer in this district now has no skelp for sale. A large domestic demand for wire products, good size export orders, as well as improvement in bolts, rivets and chain keep makers of wire rods in a comfortable position. Export inquiries for all kinds of semifinished steel are numerous and a good business is being done, although individual transactions are of moderate size.

Sheet Bars Are Improved

Youngstown, O., June 30.—Ordering of semifinished material continues in good-sized quantities. A decided improvement is shown in the demand for sheet bars and plenty of business is being entered on mill books. The bessemer grade is in greater demand than open hearth although orders for the latter are fairly heavy. The increased activity for sheet bars is due to a certain extent to makers of auto sheets who have taken on considerable business during the past two weeks. Domestic inquiry is good and some fairly large tonnages are pending.

Fair-Size Purchases Made

Cleveland, July 1.—Consumers of forging billets in this district have been making some fair-size purchases for forward delivery. One important user placed 2000 tons of forging billets for third quarter and is figuring on a similar tonnage for fourth quarter. Smaller sales have been made. Sheet bar and billet specifications with local mills are much better.

Buyers Seeking Protection

Pittsburgh, July 1.—Demands for strip steel, both hot and cold rolled, are good but the most interesting feature of the past week has been an increased disposition on the part of buyers to seek protection for the remainder of the year. Manufacturers are not booking beyond the third quarter but they have had several chances to make contracts extending over the last half and in some instances running into 1920. The price of 3.30c, Pittsburgh, for hot rolled strip does not apply to much actual business as many mills are willing to accept the hoop and band base of 3.05c. On cold rolled strip steel, however, aside from the fact that some makers are absorbing a part or all of the freight, the base price of 5.65c, Pittsburgh, is observed.

Plants Consolidated

Consolidation is announced of the proposed Sharon Steel Mfg. Co. which recently acquired the site and buildings at Wheatland, Pa., of the Blaw-Knox Co., with the Hydraulic Drawn Forging Co., of Ellwood City. This involves the formation of a company to be known as the Slick-Knox Co. with an authorized capital of $6,000,000 in equal amounts of common and preferred stock. All of the machinery of the Hydraulic Drawn Forging Co. will be moved to Wheatland and installed in the plant there and new and special machinery added to the equipment and the plant considerably enlarged. The Ellwood City plant will be occupied by a subsidiary company known as the Pressed Steel Truck Co., at present making commercial trucks and trailors.

The directorate of the new company will include Edwin E. Slick, formerly vice president and general manager of the Cambria Steel Co., Johnstown, Pa.; L. L. Knox, of the Blaw-Knox Co.; W. H. Schoen, William McIntyre, C. K. Strausbaugh and A. R. McGill. Mr. Knox is the patentee of water-cooled furnace doors and steel plant equipment.

Large Order

For Tin Plate Placed by Standard Oil Co. at Pittsburgh

Pittsburgh, July 1.—The tin plate industry at last seems to be swinging back to its normal stride, and mill operations now are on the heaviest scale they have been since early last fall. Including both the American Sheet & Tin Plate Co., and the independents, operations today are averaging close to 80 per cent of capacity. Several of the independent companies in the greater Pittsburgh district are running 100 per cent and next week the American Sheet & Tin Plate Co. plans to put into full operation all but two or three of its smaller plants. Makers quite generally have opened their books for third quarter requirements and business has been coming forward in gratifying fashion. The Standard Oil Co. of New York has placed specifications with the American Sheet & Tin Plate Co. for 100,000 base boxes. Demands from other consumers of tin plate for container purposes also are good while there has been no let up in the demand for long terms and considerable business still is being booked in tin mill black for export to Japan. Makers quite generally are adhering to a base of $7 per base box, Pittsburgh, for standard cokes on domestic business but it is reported that on export transactions, which lately have been quite numerous, concessions of as much as 50c a box have been made.

The Nonferrous Metals

	Copper	Future Straits N. Y.*	‡Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony
June 25	18.50	52.25	5.40	7.00	33.00	8.375
June 26	18.625	52.00	5.40	7.02½	33.00	8.375
June 27	18.625	51.50	5.40	7.05	33.00	8.375
June 30	19.00	51.50	5.40	7.05	33.00	8.375
July 1	19.25	51.50	5.40	7.125	33.00	8.50

†United States Steel Products Co.'s price to consumers, dealers and jobbers; future Straits for shipment from Orient after ban, now 52.25c-52.50c, c.l.f. New York.
‡American Smelting & Refining Co.'s price.
*July shipment from Singapore, c.l.f. New York, August, 51.25c.

NEW YORK, June 30.—Zinc, as the market now is beginning to say, instead of spelter, has gained about 15 points in the past seven days. Since last Friday, however, the market has been comparatively quiet, after the good business with galvanizers at the end of the week. Brass mills still are saying little in the zinc market. Prompt metal now generally is quoted 7.05c St. Louis, with each month following five points up. Some prices are made a little above and a little below this level.

Copper continues to gain a fraction of a cent each day or two, amounting to around a cent in a week. Today prompt electrolytic metal was quoted at 19c and as high as 19.12½c, while August was quoted 19.25c to 19.37½c, delivered. Casting copper now is up around 18c and futures have been sold as high as 18.37½c. Much of the strength of the copper situation is due to sentiment, such as acknowledged cheapness of the metal for the past six months, expectation of big exports soon, concentration of supplies in the hands of producers. Sales lately have been fair but not large. There is strike talk at the mines but as yet there is nothing definite. A surplus of enormous size still exists.

Brass and copper products were put up two cents to two and a quarter cents last week. This unusual advance was caused partly by the strikes at a number of mills in New York and New England, some of which are not yet settled, and partly by the advance of the ingot market. Previous prices of rolled and drawn products were based upon 18c metal.

Tin for future shipment was weak in the past few days, with the market quiet today. At the end of last week several small lots of spot Straits brought 70.50c to 71c and one or two lots a little more. There is a possibility some tin mills will resell their stocks in part on account of the good price since the market has been opened up again, and buy futures, Straits for July shipment from Singapore being quoted 51.50c and August 51.25c. These prices are nearly one cent under those of a week ago. July shipment metal is expected to arrive in August or not later than early in September.

Lead is in a fairly active market and prices are holding firmly around 5.17½c to 5.20c St. Louis and 5.50c New York in the outside market for prompt metal, while the American Smelting & Refining Co. continues to quote 5.15c and 5.45c. Some metal is available in the outside market at these figures.

No. 12 aluminum remelted is stronger, 27c to 28c, and resale virgin No. 1 32c to 33c.

Peace Brings Joy to Exporters

England and Italy Plan to Buy Heavily of American Iron and Steel Products—June Business Far Exceeds That of May—India, Australia, Far East and South America Afford Flourishing Markets

NEW YORK, June 30.—England still is the center for all export iron and steel inquiries, and yet, due to the high prices prevailing in that country, a great volume of these negotiations are being transferred to the United States than ever before. According to recent statements made in the British house of commons, American manufactured steel can be delivered at English ports at a cost from $15 to $20 per ton below the British prices. According to a report of the National City Bank of New York the United States is today supplying approximately one-half of the manufactured products entering into international trade. In spite of this situation, England remains the predominating export market and foreign inquiries are usually directed there before they reach the United States.

With the downward tendency in ocean freight rates which became marked during the past week, English exchange went off, due to the fact that the British had raised their last governmental restriction. Some American export houses were prone to criticize the British for this action, being inclined to the belief that it was prompted by a desire on the part of our competitors to see that no advantage is given exports from the United States.

Notwithstanding this development the outward movement of steel products continues brisk. This has been particularly true of the shipments of sheets, plates and railroad material to Peru, while some large orders are pending with Japan. The U. S. Steel Products Co. shipped two large cargoes of steel this week. One went to Australia and the other to South America. Among the Australian shipments were galvanized wire, nails, plain wire, steel hoops, steel plates, rolled steel angles, etc. South American shipments contained the usual run of wire products together with various machinery and auto supplies.

While the wire and specialty business continues to predominate in the export trade there are reported many opportunities abroad for agricultural implements. Argentine as a market for such implements is expected to develop before long.

The Chinese market, which showed a sudden demand about a week or so ago, continues to develop. Among the recent sales made to China were bars, nails, and wire. The individual orders varied in size from 50 to 200 tons each, although the total volume would undoubtedly be large. The Chinese business is not confined to any particular export house or group of houses, but their inquiries seem to be distributed rather generally. Japan is a heavy purchaser. Shapes, plates, bars, wire products and nails are some of the products bought. Among the more recent inquiries received from Japan was one for 2000 kegs of nails, another for 700 tons of sheets and a third for 1200 tons of light rails. The heavy demand in Japan at the moment is for light gage sheets, which are galvanized there. Japan has repeated her inquiry for 10,000 tons of heavy rails. The chief business with the Far East today, however, consists of merchant orders. Probably the best sale made in India recently was 1700 tons of bars, which was received by an American house. About 2500 kegs of nails left this port last week for India along with 2500 boxes of tin plate, and fair quantities of steel plates, sheet steel, plain wire, steel strips, black pipe, bar steel, steel hoops and steel car plates.

European Prospects Are Better

England, being confronted with an enormous demand for finished products, is turning to the United States for the necessary raw materials. An English inquiry for 20,000 tons of basic pig iron has been in the market recently, and this may be closed at any moment. It is known that about 5000 tons of semifinished products were sold to England recently, and a small tonnage of finished goods.

During the past week or 10 days there has been little export business in rails although a small shipment was made to Belgium. The business at the present moment is concerned chiefly with light rails. Even England has purchased recently 300 tons of light rails from the United States and the English rail inquiry in the market at the present is a pleasing development to American houses.

Spain has been purchasing plates, bars, angles and other miscellaneous products. Sweden has sent in an inquiry for approximately 700 tons of light rails, and an order for 500 tons has just been placed by Italy. One of the most recent inquiries received from Italy was for 20,000 tons of billets. One sale of 2000 tons of billets to that country was reported during the week.

Among other European shipments leaving this port during the past week were 200 tons of steel rails and a like amount of steel beams for France. About 100 tons of copper cable were shipped to Holland, and to Italy was forwarded 1000 tons of bessemer pig iron, 500 tons of scrap rails, 400 tons of spring steel, a number of freight cars and cast iron car wheels, and a small consignment of galvanized sheets. A shipment of 150 tons of steel bars was made to Sweden.

The confirmation by R. D. Chipp of the Vulcan Steel Products Co., of a contract closed by that company with the French government to rebuild the Nancy district has revived the interest of American exporters in the French market. According to the plans now reported to be under way the French will spread the period of reconstruction over 10 years and only such material as cannot be had in France will be purchased outside. Numerous French manufacturers have been visiting the United States; many are still here. Their statement of the case appears to close the doors of France to any of the basic iron and steel commodities. The contracts obtained by American engineers in France provide that French labor and French material must be used in all cases where it is at all obtainable.

Greece is coming into the market but no sales could be discovered as yet. Among the Greek inquiries were noted wire and bars.

South American business is going very strong, consisting of railway material and manufactured specialties chiefly. Sales of bars, plates, and other steel products are being made there, however. South America is a market second in importance only to the Far East. Argentine and Brazil have been purchasing wire products, bars, etc. One house reported a sale of approximately 2000 tons of light rails to South America and another, a sale of 150 tons of sheets. Shipments during the past week for Buenos Aires included 800 tons of plain wire and 200 tons of steel bars. Argentine shipments also included

miscellaneous supplies of galvanized wire, mild steel bars, hardware, nails, tacks, etc.

Export houses generally state that the business done during the last two weeks of June was much better than during the first half of the month.

Bid Privately on 50,000 Tons of Armor Plate

Washington, July 1.—Armor plate manufacturers are eager to know what course Secretary of the Navy Daniels will pursue in regard to private bids he has received on 50,000 tons of armor plate for six battleships. Daniels' dissatisfaction with prices quoted in the past by the manufacturers and the question as to whether he still has authority to commandeer their plants, if he considers such action necessary, contribute to the making of an interesting situation.

In view of the high labor cost it is not generally believed that manufacturers could reduce their bids, despite the large tonnage involved. Three courses now remain open for the secretary: To accept the bids, to reject them and negotiate privately for lower prices, or commandeer the plants.

In view of the signing of the peace treaty and the sentiment in congress against further exercise of wartime powers by various agencies of the government it is not believed the secretary will seek to take over the plants, even if the attorney general should rule he has the power to do so.

Nothing has been announced to indicate the price named by the manufacturers in their bids, and it is not known why the secretary asked for private bids, unless he considered that it would be an easier matter to negotiate in the same way subsequently if the bids were unsatisfactory.

This is the largest tonnage of armor plate ever asked for at one time by the department and represents about 18 months' operation of the three producing plants of the country.

May Exports

Show Increase Over April of 11,082 Tons

May iron and steel export statistics as issued by the department of foreign and domestic commerce, show that foreign trade is steadily on the increase. April exports were 396,813 tons, while in May they aggregated 407,895 tons, an increase of 11,082 tons. Importations of iron and steel also showed a slight gain, the imports for April totalling 16,500 tons, while those for May were 17,885 tons, an increase of 1325 tons.

Pig iron exports showed the greatest increase. They totalled 37,087 tons, compared with 17,038 tons for April. Structural iron and steel suffered a slight decrease, the figures for April showing 42,550 tons against 36,411 tons in May. The greatest decrease was suffered by sheets and plates, the exports for April totalling 121,544 tons, while in May only 90,116 tons were exported. Steel billets and blooms increased from 11,488 tons in April to 20,771 tons in May. Wire rods showed a marked decrease, the May total being 5357 tons, while that for April was 13,365 tons. Steel rails gained, exceeding the April figure by 15,671 tons. Hoops and bands stayed at about the same figure as in April, when the total exports were 4501 tons. May figures were 4464 tons.

Imports increased 1325 tons. During April 5089 tons of pig iron were imported and in May only 2428 tons were brought in. Importation of scrap showed a slight increase, April's imports being 8746 tons while May's figure was 10,130 tons.

No iron ore was imported from Spain as against 1358 tons in April, but 16,989 tons came in from Sweden, where during the preceding month none was received. The total imports of iron ore from all countries in May were 28,164 tons, compared with 24,195 tons in April.

There were no imports of ferromanganese during May, while 260 tons of ferrosilicon were received, an increase over that of April.

Knecht is Honored

M. Marcel Knecht, distinguished French scholar and publicist and well known to American iron and steel manufacturers through the invitation he recently extended to the American Iron and Steel institute to visit France next summer, was the recipient of the honorary degree of doctor of laws from the University of Wisconsin at the annual commencement exercises at Madison. This honor was bestowed on M. Knecht in recognition of his eminent work for the strengthening and preservation of the existing warm friendship between the United States and France. Following the conferring of the degree, Marcel Knecht was the honorary guest at a dinner given by Dr. Arthur G. Sullivan, of Madison, at the Madison club, at which E. A. Birge, president of the University of Wisconsin, Governor E. L. Philip of Wisconsin and other notables were present.

Chicago Base

On Steel Will be Inquired Into by Trade Commission

Chicago, July 1.—Inquiry into the fairness and feasibility of establishing a Chicago base on iron and steel products is to be made by the federal trade commission at the suggestion of Chairman E. H. Gary of the Steel corporation, according to an announcement made by the Western Association of Rolled Steel Consumers which was organized some months ago to push this matter. The proposal that the trade commission examine into the facts was made by Judge Gary under date of June 19 in a letter to John S. Miller, Chicago attorney, who has been retained by the association as its counsel.

In that communication Judge Gary wrote:

"I suggest to you that, under all circumstances, it might be appropriate and wise for you and me to visit the chairman of the federal trade commission, and for you then to state the position of your clients and ask the commission to make an inquiry into the subject. I would consent, so far as my corporation is concerned. Of course, the whole steel industry ought to be heard in regard to such a matter, and if the commission desired I would call the manufacturers together and ask them to appoint a committee to represent them before the commission so that we could have a full hearing at which all interests would have an opportunity to be heard."

Prior to this development Mr. Miller had taken up the case directly with Judge Gary and considerable correspondence was passed. The association's announcement covering these negotiations states:

"Judge Gary's first suggestion was that the matter was an economic and not a legal one. He then said he was giving it earnest consideration 'from the standpoint of what is fair and just.'

"Other correspondence passed between the two, culminating, only a few weeks ago, in a suggestion by Judge Gary that a committee of the Western Association of Rolled Steel Consumers meet a similar committee representing the mill interests and thus seek to bring about an amicable adjustment of the controversy.

"It appeared that such an adjustment was upon the brink of being consummated, when the general protest against the sole Pittsburgh base came from a number of other quarters."

It is expected that Judge Gary and Mr. Miller will appear soon before the federal trade commission and the date will be set for the hearing of the controversy.

Pig Iron Output Finally Gains

Increasing Production During June is First Shown Since Decline Began Last Fall —Steel Works Furnaces Responsible for Upturn—More Stacks Now Active

AFTER eight successive months of declining production, pig iron output has started on the upgrade. The June figures showing production of coke and anthracite pig iron, reveal a gain of 3.8 per cent over May. The 8-month steady decrease had brought production down 40 per cent from the high mark of September, 1918.

Production in June was 2,116,702 tons compared with 2,107,729 tons in May, a gain of 8973 tons. In view of the shorter month, the average daily production record reveals more clearly the extent of the gain. The furnaces averaged daily during June 70,557 tons against 67,991 tons in May, a gain of 2566 tons. The high mark set in September was 113,774 tons.

MONTHLY PRODUCTION

	1919	1918	1917
January	3,306,279	2,403,227	3,159,839
February	2,947,555	2,318,242	2,649,935
March	3,088,023	3,209,996	3,255,813
April	2,474,374	3,273,355	3,328,061
May	2,107,729	3,451,884	3,413,677
June	2,116,702	3,316,148	3,260,234
Total 1st half.	16,040,662	17,972,852	19,067,559
July	.....	3,408,584	3,337,442
August	.....	3,378,479	3,238,970
September	.....	3,413,223	3,140,742
October	.....	3,482,392	3,296,286
November	.....	3,347,844	3,198,597
December	.....	3,434,114	2,885,380
Total 2d half..	.....	20,464,636	19,097,417
Grand total..	16,040,662	38,437,488	38,164,976

Increased output of the steel works or nonmerchant furnaces was responsible for the gain, these stacks producing 1,647,117 tons in June against 1,574,679 tons in May, a gain of 72,438 tons. The production of merchant iron last month was only 450,670 tons against 514,002 tons in May, a loss of 63,332 tons. The average daily output of the steel works furnaces in June was 54,904 tons and in May, 50,796 tons, a gain of 4108 tons, or 8 per cent. Merchant stacks produced daily in June 15,022 tons, and in May 16,581 tons, a loss of 1559 tons, or 9.4 per cent.

AVERAGE DAILY PRODUCTION

	1919	1918	1917	1916	1915
Jan.	106,654	77,523	101,930	102,319	51,323
Feb.	105,270	82,794	94,641	106,157	59,521
March	99,614	103,548	105,026	107,343	66,009
April	82,479	109,112	110,936	107,517	70,484
May	67,991	111,351	110,119	108,535	72,747
June	70,557	110,538	108,675	107,127	78,998
July	.....	109,954	107,659	103,907	82,687
Aug.	.....	108,983	104,483	103,156	89,510
Sept.	.....	113,774	104,691	106,935	94,478
Oct.	.....	112,335	106,332	113,167	100,656
Nov.	.....	111,595	106,620	110,593	101,174
Dec.	.....	110,602	93,077	102,715	103,278
Avg.	88,622	105,293	104,562	106,610	81,022

Active stacks on the last day of June numbered 200, a gain of three over the May 31 record. Relighting of nonmerchant furnaces accounted for the gain as 13 stacks of this class were put in blast and three blown out. Six merchant furnaces were relighted and 13 blown out.

Production for the first half of 1919 totals 16,040,662 tons, a decrease of 4,400,000 tons from the total output in the last half of 1918, and a decline of 1,930,000 from the total in the first six months of last year.

The output of ferro shows a slight gain, increasing to 14,479 tons in June from 14,301 tons in May, a gain of 178 tons. Spiegel production dropped to 4436 tons in June from 4747 tons in May, a loss of 311 tons.

JUNE PIG IRON

States	No. of stacks	No. in blast last day of month: June	May	Total tonnage made: Merchant	Nonmerchant	Totals: June	May
Pennsylvania	159	75	77	131,215	672,693	803,908	782,985
Ohio	80	48	44	86,285	453,986	540,271	525,783
Alabama	45	17	16	62,782	74,925	137,707	133,200
Virginia	19	3	5	16,408	.....	16,408	18,556
New York	28	15	11	64,461	57,057	121,518	135,073
New Jersey	5	2	2	8,034	.....	8,034	9,621
Illinois	25	12	12	19,752	150,123	169,875	171,820
Colorado	6	3	3				
Indiana	16	11	13	25,727	219,817	245,544	230,606
Maryland	4	1	1				
Wisconsin	6	2	2				
Kentucky	7	1	1				
Tennessee	16	3	4	11,353	7,563	18,916	26,642
West Virginia	4	1	1				
Washington	1	0	0				
Georgia	2	0	0				
Texas	3	1	0				
Minnesota	3	2	2	24,653	10,953	35,606	45,395
Michigan	3	3	2				
Missouri	1	0	1				
Spiegel—All states	..	..	..	.....	.....	4,436	4,747
Ferro—All states	..	..	..	.....	.....	14,479	14,301
Totals	433	200	197	450,670	1,647,117	2,116,702	2,107,729

Makers Protest

Railroads Order to Bill at Price Ruling at Delivery

Washington, July 1.—Instructions from the railroad administration to car builders not to include in their material certificates, bills for steel plates, shapes, bars and sheets where the base billing price exceeds those in effect when shipment is made are based on the policy of some of the leading steel interests to continue for the benefit of the government a ruling the price fixing committee of the war industries board insisted upon when that body was in power. This ruling was to the effect that the price in force in the quarter in which delivery was made should be the price the purchaser should pay the maker.

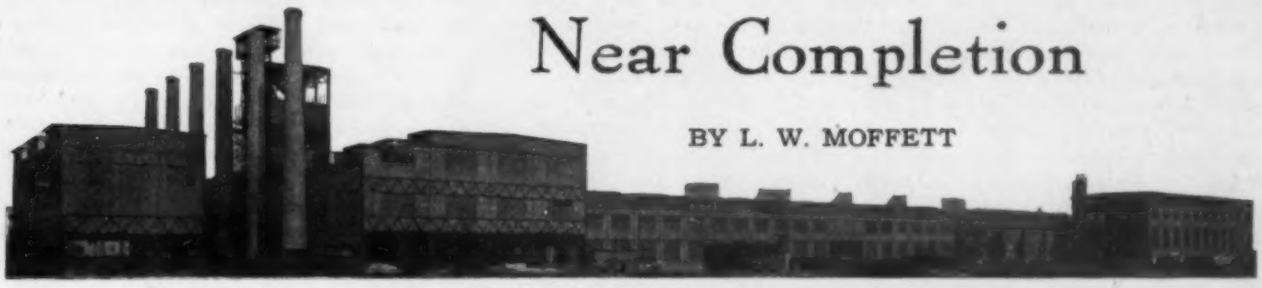
Termination of the price-fixing authority exercised by the war industries board carried with it such injunctions as have been in force but several producers, reducing their prices along with those of the entire industry on Jan. 1, notified the government the clause calling for the price in effect at time of delivery would be continued until all government contracts or those by which the government would benefit would be filled or canceled. Then when the industrial board approved the reduction effective March 21 this intention was again expressed and apparently will remain operative until all the war-time contracts are terminated.

Many steel producers have protested the order and their claims in all probability will be given full legal consideration.

Mr. Spencer's order that steel hereafter be bought only from Pittsburgh mills is in fact only a recommendation to the regional purchasing directors. It had been contemplated to issue such an order, but after consideration it was decided to make it a recommendation.

Maryland Steel Plant Extensions Are Near Completion

BY L. W. MOFFETT



Exterior View of the Blooming Mill Building of the Maryland Plant of the Bethlehem Steel Co., at Sparrows Point

ASIDE from work on two new 450-ton blast furnaces and a 60-inch universal plate mill which is almost finished, the extensive additions and improvements to the Sparrows Point, Md., plant undertaken some time ago by the Bethlehem Steel Co. have been completed. According to the official announcements of Chairman Charles M. Schwab and President E. C. Grace, of the Bethlehem Steel Corp., the company by the end of 1919 will have expended $50,000,000 on the Sparrows Point property since its acquisition from the Pennsylvania Steel Co. It is the purpose of the company to continue its policy of expansion, eventually developing at Sparrows Point one of the largest steel plants in the country, with many lines of commercial products.

Supplementing this program, the company will authorize for immediate completion the doubling of the tin plate mill, making a 24-mill plant, and the building at once of a plant for the production of sheets, as well as adding another 250-ton tilting open-hearth furnace to the new furnace plant. This will involve an increased expenditure of approximately $5,000,000 over and above the work just completed and in progress. With the additions made and under way the Sparrows Point plant will have an annual ingot capacity of practically 1,200,000 tons.

Situated on the Patapsco river, about four miles from the point where the river enters Chesapeake bay, this plant, ideally located for export trade, is ready to meet demands at a time when there is promise that the steel industry of the United States will enter upon the greatest era in its history in serving foreign markets. Also, the Sparrows Point plant finds itself in a much better position to take care of domestic markets.

Before entering upon a description of the units added since May 31, 1917, when THE IRON TRADE REVIEW carried an illustrated article regarding the company's new tin plate mill, brief reference will be made to the general layout of the plant and the relative location of its extensions as shown in Fig. 2. A 600-foot ore dock, additional to the original 600-foot dock, has been built to the eastward on the water front. There have been no additions made to the originating loading wharves. Immediately to the west of these wharves is located a new central water pumping station and to the west of this, four new batteries of 60 Koppers ovens each, paralleling the water front. The other new units include two 450-ton blast furnaces running east in a line with the four old ones which stand to the north of the docks; a duplexing plant to the north and running at right angles with the furnaces; a 40-inch blooming mill; and a 110-inch plate mill and a 60-inch universal plate mill, nearing completion, north of the duplexing plant.

The ore dock frontage now is 1200 feet, the additional dock doubling the capacity, and is laid out with a view of further extensions east, which can be made almost without limit. The new dock is shown in Fig. 1. The river has been dredged so that there now is a channel 90 feet wide by 40 feet deep leading from the government channel, 600 feet wide and 35 feet deep, which is amply large to handle any boat entering the bay. Ore, which at this time is coming from Cuba, can be put into cars for shipment to other plants, into stock, or directly into larry cars for immediate use in the furnaces.

The ore is delivered by one 6500-ton and four 11,000-ton steamers and is taken from the boats by two 7½-ton grab buckets made by the Brown Hoisting Machinery Co., Cleveland, and two 17-ton grab buckets made by the Mead-Morrison Mfg. Co., Boston. There also is a 15-ton grab bucket for handling ore into and out of stock. The discharging capacity is one 12,000-ton boat in 12 to 14 hours, the 1200-foot pier being capable of unloading

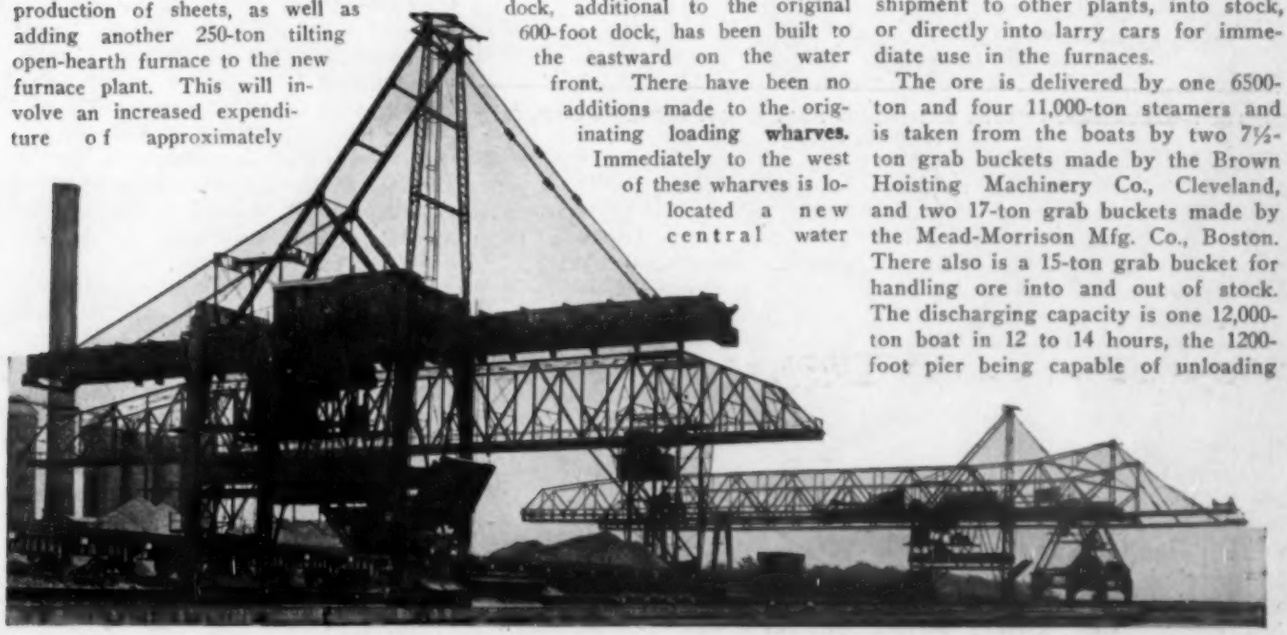


FIG. 1—VIEW OF THE NEW 600-FOOT ORE DOCK WHICH DOUBLES THE ORE HANDLING CAPACITY AT SPARROWS POINT

two ships simultaneously. The capacity of the ore storage yard is about 1,000,000 tons.

The extension at the coke plant consists of a 1000-foot coal dock of 300,000 tons storage capacity. The dock is equipped with two 9-ton man trolley buckets and a cable car system. The dock is arranged to unload coal shipped either by rail or water. A coal handling and preparing plant is provided with two breakers, four crushers made by the Pennsylvania Crusher Co., Philadelphia, and the necessary belt conveyors and bins.

With the four new batteries of 60 Koppers ovens each, the Sparrows Point plant has a total of six batteries, which can produce about 125,000 tons of coke each month. Modern by-product recovery equipment has been installed, including a benzol plant. Compressors made by the Ingersoll-Rand Co., New York, have been provided to pump the surplus gas to the city of Baltimore. New equipment similar to the old has been provided for handling the coke. It is quenched and discharged on a wharf and then elevated by an incline belt conveyor and screened over a revolving grizzly, after which it is conveyed on a horizontal belt to the blast furnace bins.

The old blast furnaces are 85 feet high, each with four stoves, while each of the new ones, being built by the Riter-Conley Co., Pittsburgh, is 95 feet high, with a 17-foot hearth and 22-foot bosh, each with four stoves which have 2½-inch checkers. All of the furnaces are equipped with Neeland tops.

Water for the furnaces is supplied by a new centrifugal pumping station erected immediately above the loading pier. The station has four electrically driven centrifugal pumps, each of 30,000,000-gallon capacity, with a 4-foot discharge main. The water is first pumped into a large standpipe before being supplied to the furnaces, each of which will be blown by two 2000-horsepower gas engines made by the Bethlehem company. As a reserve there are three blowing engines built by the Southwark Foundry & Machine Co., Philadelphia.

The new open-hearth extensions consist of a duplexing plant completely housed in a building 1100 feet long. The crane on the charging side has a span of 78 feet, while that on the pit side has a span of 70 feet.

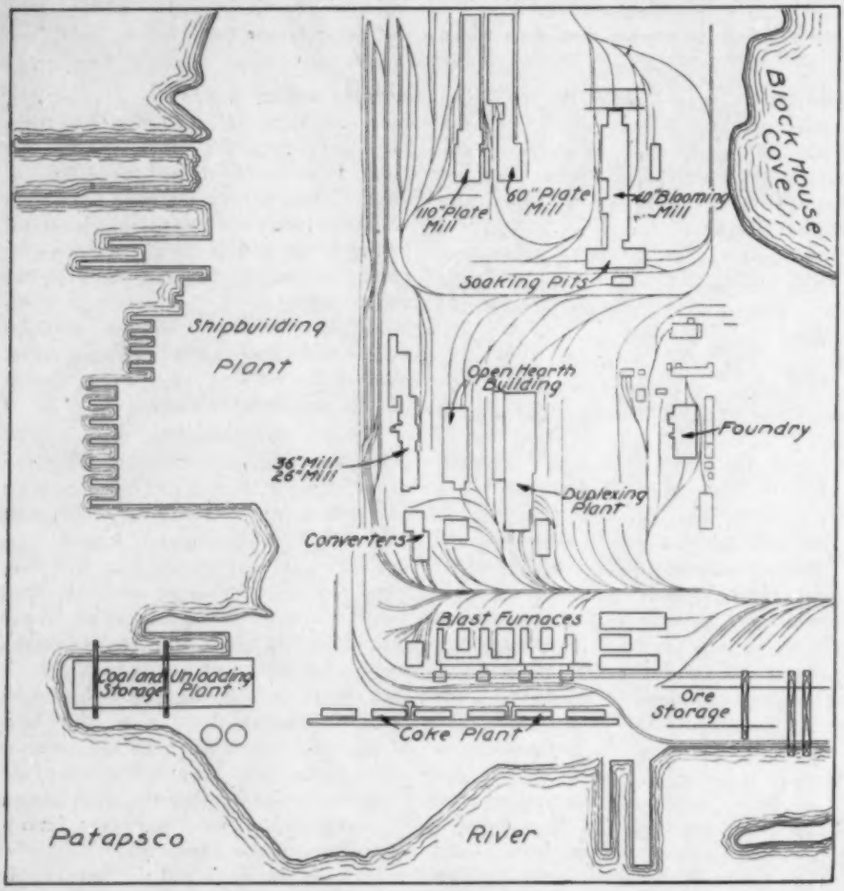


FIG. 2—ARRANGEMENT OF UNITS OF MARYLAND PLANT OF THE BETHLEHEM STEEL CO., SPARROWS POINT

There are four 200-ton open-hearth tilting furnaces, four 30-ton bessemer converters built by the Pennsylvania Engineering Works, New Castle, Pa., and one 1300-ton metal mixer, coke oven gas fired, built by the same company and located at the south end of the building adjacent to the converters. A 250-ton metal mixer is being installed between the second and third open-hearth furnaces. It is so constructed that hot metal can be poured out either on the charging side or on the pit side for recarburizing the heats in the ladle.

There are three 100-ton cranes on the charging side, and two 175-ton and two 40-ton cranes on the casting side, all built by the Morgan Engineering Co., Alliance, O.

Scrap is carried to the converters by means of a skip hoist shown in Fig. 5, the material being loaded in the skip with a magnet. The skip is raised by an electrically driven cable hoist to a point above the converters where it is dumped automatically into another car which travels parallel on a line with the converters. The scrap is dropped on the scrapping floor of any desired converter and from there it travels by chute into the converter in the usual manner.

The pit side of the mixer is served by a 100-ton crane. The metal can be poured from the mixer directly into a ladle hanging on a crane and carried to the converter or it can be poured into a ladle on a transfer truck on the scales. After being weighed a sifter moves the cars in front of the proper converter where the ladle is handled by a crane.

Novel Routing of Blown Metal

The blown metal is caught in a crane ladle and either can be carried directly to the open-hearth furnaces or placed in a transfer truck which runs on a track underneath the charging floor. In front of each furnace is a hatchway, as shown in Fig. 5, through which the metal can be lifted, allowing any furnace to be charged without interfering with the charging of the other furnaces.

Three of the 200-ton furnaces are in operation and the fourth is under construction. Each furnace has a 17 x 44-foot hearth, having an area of 748 square feet along the metal line and 54 feet from chill to chill. The furnaces are equipped with water-cooled frames, doors and chills made by the Blaw-Knox Co., Pittsburgh. At present oil and tar are being used as fuel and consequently no ports are used. Reversing valves of the Blaw-Knox type are installed.

Any reaction slag is poured off from the front side of the furnaces from

spouts into slag bowls on the ground level underneath the furnace. These bowls also are used for catching the overflow slag from steel ladles as shown in Fig. 6. Each furnace has waste-heat boilers constructed by the Babcock & Wilcox Co., and four mechanical producers built by the Morgan Construction Co., Worcester, Mass., which are housed in a building parallel to the furnaces on the charging side.

The stock yard is east of the open-hearth department. Limestone, ore and scale are carried on overhead tracks and dumped in storage bins and drawn out into standard charging pans through hoppers underneath.

The scrap yard paralleling the stock yard which is 600 feet long and 80 feet wide, is served by two 10-ton cranes equipped with magnets. The mold yard is adjacent and parallel to the pit for its entire length and has a span of 80 feet. In addition to the regular runway tracks it contains 12 lateral tracks, each of such length as to carry a sufficient number of trucks with roller bearings manufactured by the Hyatt Roller Bearing Co., New York, for a 100-ton heat. All cold stock and supplies are brought on the charging floor on an elevated track entering the building opposite from the converting end.

The stripping cranes are equipped with auxiliary hoists, making it easily possible to pick up molds or ingots which may be knocked off of the buggies.

Assures Cool Working Floor

The soaking pit building has 24 pits equipped with electrically operated covers. The gas is supplied by mechanical feed producers built by the Morgan Construction Co. The soaking pits are provided with two cleaning holes; one in front and one in the back of the bottom of the pits. The cinder from these pits drops into cars on a narrow gage track which runs under each pit and is dumped into a large pit outside of the building where it is loaded by means of a grab bucket operated by an electric crane. The soaking pits are built with false crowns over the combustion chambers, allowing an air space of 3 inches. Above this is a steel plate working floor paved with fire brick which reduces the amount of heat radiated to the working area above.

After the steel is heated it is drawn by pit cranes and charged into ingot buggies which are pushed by an electric locomotive to a position over the hydraulic ingot tilter. The tilter tips the ingot pot in the buggy, throwing

FIG. 3—SCRAP IS LOADED AT DUPLEXING PLANT IN SKIP BY MEANS OF A MAGNET

the ingot on the table. Two approach tables carry the ingot to the front reversing table of a 40-inch reversing bloom mill built by the Mesta Machine Co., Pittsburgh. The blooming mill, which is shown in Fig. 8, is driven by a 5000-horsepower reversing motor capable of a peak load of 200 per cent, built by the General Electric Co., Schenectady, N. Y. This bloomer rolls all sizes of slabs up to 40 inches wide and 10 inches thick and can roll blooms and billets down to 4 x 4 inches without a change of rolls.

The slabs when rolled are idled through a 500-ton hydraulic upcut crop shear. The slab then is transferred over to an 800-ton steam intensifier shear. This shear is equipped with two loading tables which are hydraulically operated. One of these loads slabs to be put in stock in the slab yard and the other loads slabs which are to be delivered to the plate mills hot, thus saving heat which ordinarily would be lost if the slabs were allowed to cool before being rolled.

A 24-inch continuous mill built by the Morgan Construction Co. receives 8 x 8-inch blooms from the 40-inch mill. The blooms may be rolled into 6½ x 6½, 6 x 6, 5 x 5 or 4 x 4-inch billets or 2 x 8-inch sheet bar blanks.

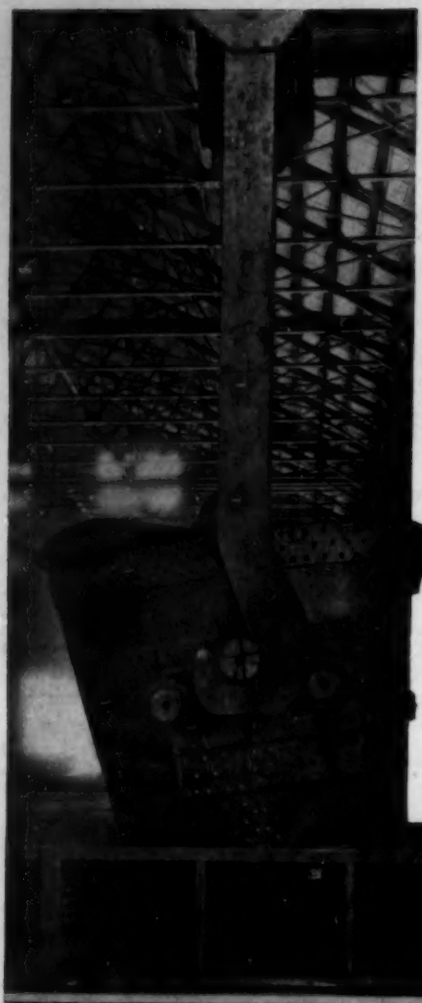
The 4 x 4-inch billets or the sheet bar blanks enter an 18-inch continuous billet mill and are rolled into billets of any size down to 1½ x 1½ inches or any weight of sheet bar. The billets or sheet bars are cut to the desired length by a steam flying shear.

Handling Semifinished Material

The sheet bars pass through the pinch rolls and are placed in the piler in drafts of two ingots each, after which they are lifted from the piler by a 15-ton, 120-foot span electric crane equipped with a spider for lifting the bars which are then placed on specially constructed cooling beds.

When changing the 18-inch continuous mill from sheet bars to billets or vice versa, the practice will be to change the housings which are always

FIG. 4—VIEW OF DISCHARGE SIDE OF COKE OVENS, THE WHARF AND BELT CONVEYOR



set up and ready with rolls and accessories. The 18-inch mill is equipped with two 120-foot cooling beds with sufficient capacity to handle the product of this mill. These beds also are equipped with scales situated under the loading cradles so that it is possible to weigh the product of the mill.

The 24-inch mill is equipped with a broadside transfer of sufficient length to transfer a standard ingot when rolled into 4 x 4-inch billets. This transfer carries the different products of the 24-inch mill, which it is not desired to send to the 18-inch mill, off to one side to tables which carry it to a separate billet shear. This product also can be weighed on scales similar to those used in the 18-inch hot bed.

All of the switchboards throughout the mill have spare boards, which makes it possible when the working boards give trouble for the operator to turn a knob and throw in a spare switchboard while the working board is being repaired, thus saving time which ordinarily is lost in making repairs.

The motor room contains the latest electrical appliances and is served by a 50-ton electric crane. The mill building is equipped with a 50-ton and a 25-ton electric crane. Three 15-ton 85-foot span electric cranes handle material in the slab yard. For handling hot slabs for the plate mill the blooming mill is equipped with two 15-ton, 21-foot span electric cranes which load the slabs on a specially constructed car for transfer by locomotives.

Crops from the 500-ton hydraulic upcut crop shears are transferred by an auxiliary conveyor to the large loading conveyor which handles the crops from the 800-ton steam intensifier slab shears. This latter conveyor loads all crops into charging boxes ready for charging in the open-hearth furnaces.

All of the mill buildings are built of brick and steel with metal sash windows. Good lighting and ventilation is assured. The motor room of the blooming mill has a cement floor while the mill proper is paved with brick. The stripper building is 58 feet 7¼ inches wide and 135 feet long, while the gas producer and soaking pit building is 90 feet 4 inches over the pits and 32 feet 4 inches over the producers, making a total span of

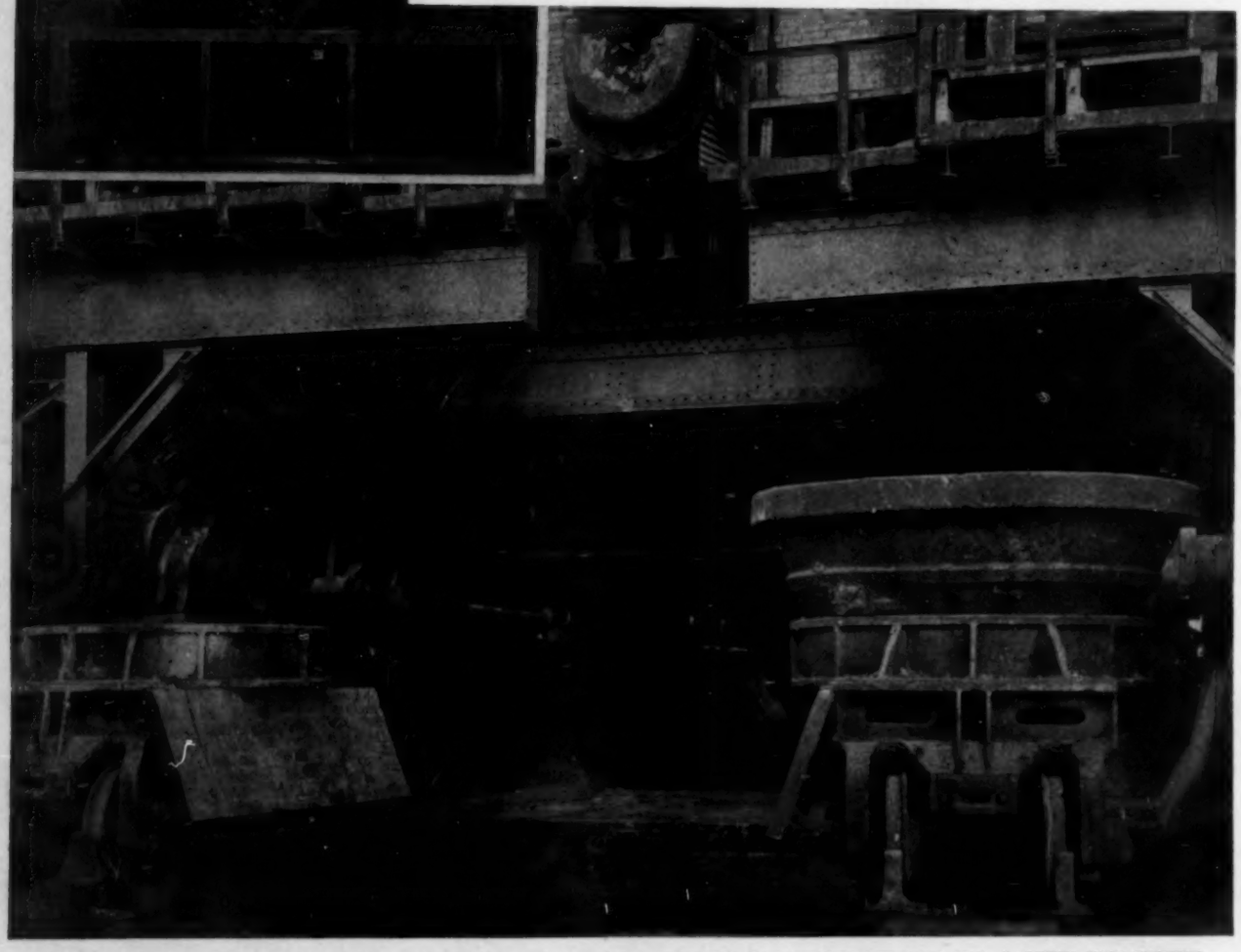


FIG. 5—RAISING BLOWN METAL THROUGH HATCHWAY PREPARATORY TO CHARGING OPEN-HEARTH FURNACE FIG. 6—THESE CARS RECEIVE OVERFLOW SLAG FROM LADLES

122 feet 8 inches. The length of the building is 414 feet. The main new building is 93 x 864 feet and the motor room is 45 x 744 feet.

The 110-inch three-high mill, the first unit of the plate mill layout which was rushed to completion in 1917 and began operating in September of that year, was a big factor in helping to supply the enormous demand for ship plates to the various shipyards of the Bethlehem Steel Corp. during 1918.

This mill is equipped with six 4-door regenerative heating furnaces, at the present time using fuel oil. Water-cooled valves are installed on these furnaces, and both valves and door lifts are electrically operated.

Two 10-ton charging cranes with the end hook grab handle the slabs as they come from the new 40-inch blooming mill on large steel trucks, piled in position ready for charging. These slabs retain considerable of their initial heat when they are charged into the reheating furnaces, and when they are sufficiently reheated are placed on a slab car, operating between the furnaces and delivered to the approach table of the mill proper.

The mill, one view of which is shown in Fig. 10, was built by the Mesta Machine Co., and is driven by a 4000-horsepower motor built by the General Electric Co., Schenectady, N. Y. The roll diameters are 36 inches for the top and bottom rolls and 24 inches for the middle roll.

A special feature in connection with this mill is the electrically operated lifting tables which are so designed in width as to prevent any overhang of the hot plates in the bearings to the rollers. The mill operates at 52 revolutions a minute and has no difficulty in rolling plates up to 70 feet in length. The minimum gage of material rolled is ¼-inch, and the maximum width of about 100 inches.

The cooling beds are of the straight runway type of roller or spool conveyor, leading to the inspection table at the finished end. This table, Fig. 7, permits of the plate being placed on edge for inspection.

There are three sets of hydraulic shears made by R. D. Wood & Co., Philadelphia, equipped with magnet hold down, Fig. 9. The cross-cut shear has a stroke of 137 inches and the two side shears 187½ inches with a shearing capacity of 2⅜ inches cold. There also are two scrap shears and one large rotary circle or head shear.

After the plate is sheared and weighted it is passed on to a long conveyor or kick-off table running parallel to the cooling tables, and divided into nine kick off sections that allow for the distribution of various orders into separate piles for loading or storing on the loading bank.

Running parallel with the loading bank is a depressed track capable of holding 15 cars for loading at one time. Three 15-ton 96-foot span cranes constructed by the Alliance Machine Co., Alliance, O., handle the entire product from this mill.

Electric energy for the Sparrows Point works is supplied from a power plant designed for an ultimate capacity of 100,000 kilovolt amperes. Five generating units are under installation, each unit consisting of a 5000-kilovolt ampere generator, made by the General Electric Co., producing 3-phase, 25-cycle current at 6600 volts. The generator is driven by a Bethlehem tandem blast furnace gas engine. A unique feature of the station is that all auxiliaries, including gas washing equipment, pumps, air compressors, ignition apparatus and exciters, are contained in the building proper.

The electric switching equipment, furnished by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is carried in three galleries, one containing the main bus structure, the second all switching equipment and

7—INSPECTION TABLE AND FINISHING END OF 10-INCH PLATE MILL. FIG. 8—A VIEW OF THE 40-INCH BLOOMING MILL

FIG. 9—THE PLATE MILL IS EQUIPPED WITH THREE SETS OF HYDRAULIC SHEARS HAVING MAGNET HOLD-DOWN

operator's bench board and the third reactances and lighting arresters.

A complete substation is arranged in one end of the power house to take care of all auxiliary electrical equipment in the blast-furnace and open-hearth departments which are in close proximity. This station furnishes electrical energy over a double ring bus transmission system to seven substations located throughout the plant.

In order to accommodate its employes, the Bethlehem company has built a number of modern hollow-tile stucco residences in Sparrows Point.

French War Imports

During the war French imports of iron and steel according to statistics just issued amounted to more than 50 per cent of her prewar production. The heavy total is suggestive of the extent to which the French iron and steel industry was crippled by the German occupation of the producing districts of northern and northeastern France. The imports of by-product in metric tons in 1916, 1917 and 1918 were as follows:

	1916	1917	1918
Pig iron	612,012	657,022	375,447
Steel blooms, billets and bars.	1,510,549	1,509,169	932,365
Wire rods	80,203	54,093	52,483
Plates	262,558	265,132	218,295
Wire	78,070	84,896	33,259
Rails	131,852	121,515	156,248
Tin plate	80,708	45,329	58,219
Total	2,755,952	2,737,156	1,826,316

The United Kingdom furnished more of this tonnage than any other country, supplying 1,448,894 tons in 1916, 1,482,030 tons in 1917 and 708,504 tons in 1918. The United States is credited with 170,832 tons in 1916, 1,277,349 tons in 1917 and 1,015,456 tons in 1918.

The pride of the former Germany navy, the "unbeatable" U-boats, are not designed for a watery grave as was suggested at the early sessions of the peace meeting. G. Cohen Sons & Co., London, England, recently purchased 25 undersea craft which had been turned over to England. This company during the war handled considerable quantities of scrap iron brought from the battlefields of France.

Vanadium From Waste

According to the *Stockholms Dagblad*, a new industry has been established in Smaland, Sweden. The concentration of ores at Taberg throughout the course of centuries has left huge accumulations of waste. Recent research has revealed a content of vanadium in this waste. A Swedish company has purchased a portion of these old workings with a view to the extraction of the vanadium.

FIG. 10—THREE-HIGH 110-INCH PLATE MILL WHICH HELPED SUPPLY SHIP PLATES DURING THE WAR

Finding Costs of Manufacture

Efficient Method to Enable Executives to Have Full Knowledge of Conditions of Their Business at All Times Outlined—Special Forms for Keeping Records Advantageous—Direct and Indirect Charges Computed

BY CLIFFORD E. LYNN

COSTKEEPING is a subject of such fundamental importance in manufacturing, that to solve its problems a man must bring to them an unbiased mind, and a determination to analyze situations thoroughly so as to form an accurate judgment.

When cost of production and operating is known it should be properly tabulated, so that it may be compared with previous or subsequent costs. In this manner any variations in the cost of manufacture are immediately determined, and any economy that may be necessary is at once brought to the attention of the executive, thus enabling him to have a full knowledge of the conditions of his business at all times.

Among other advantages of an efficient cost system, are the following: It serves as a basis for judging the efficiency or inefficiency of each plant, department, foreman, or group of men; supplies the proprietors with information requisite for increasing business; locates the leaks; serves as a basis for determining selling prices; establishes a perpetual inventory, and gives the employer a monthly statement of business conditions.

Cost-finding methods are divided into two classes, estimating costs and determining actual costs. The former consists of estimating the material used, labor expended, and a percentage to cover overhead expenses. The latter method, which beyond doubt is the best, consists of the special order system in which elements of cost are charged to an order, job or article, and the product system in which the costs are charged to the product direct. The elements of all costs are direct and indirect material and labor, and indirect expense, sometimes called burden or overhead expense, which includes supplies, light, heat, power, freight, maintenance, insurance, taxes, interest, rent, depreciation, in fact, anything that does not enter the product itself.

To secure direct and indirect material and labor costs it is necessary for the cost department to receive from the stores department all requisitions issued for material supplies, etc., to be charged to any department, product, job or order. These requisitions should then be checked against the production reports and orders to prevent useless waste of material and ascertain the correct amount, size, weight and description of the material and the date it was used. A record of all labor, showing on what job or product the expense was incurred, and salaries of clerks, foremen, inspectors, etc., should be secured from the time

This is the fifth article in the series on cost accounting methods suitable for industrial plants written exclusively for THE IRON TRADE REVIEW.

Production Order and Cost Sheet

_____ Dep't. No. _____ 19____

Quantity	Description	Diagram

Date Wanted _____ 19___

Complete _____ 19___

Signed _____

You are hereby authorized to manufacture the above articles as stated.

_____ Supt.

Material				Labor					Pattern			
Quan.	Descp't.	Rate	Amount	Date	Workman	Hrs.	Rate	Amount	Particulars	Rate	Amount	
Total Mat'l									Total			
" Labor									Drawings			
" Pattern												
" Dwg.												
Indirect												
Total Cost				Total Labor					Total			

CONVENIENT FORM FOR PRODUCTION ORDER, WITH PROVISION FOR MAINTAINING RECORD OF COST

Statement of Factory Expenditures

Accounts	Department							
	1	2	3	4	5	6	7	Total
Direct								
Mat'l								
Labor								
Total								
Indirect								
Labor								
Supervision								
Supplies								
Light Heat Power								
Freight, Express and Cartage								
Maintenance								
Depreciation								
Total Exp.								

Store Room		Operating Expenses			Distribution		
Operations	Amount	Account	Amount	Total	Dept.	%	Amount
Inventory		Superintendence			No. 1	20	
Purchases		General Labor			2	20	
Total		Light, Heat and Power			3	20	
		Insurance			4	20	
Dept. Oper'd		Taxes			5	20	
Inv. Raw Mat'l		Freight Express			6	20	
Mat'l Fin.		Factory Supplies			7	20	
Grand Total		Salaries Factory Office					
		Factory Offie Supplies					
		Incidentals					

Approved _____ Correct _____

①

Daily Time Ticket

Dept. _____ Clock No. _____

Date _____ Name _____

Time Record	Elapsed Time H.	Elapsed Time M.	Order Number	Operation No.	Machine No.	Fin. O. K.	Damaged	Bad	Piece Wk. Rate	Piece Wk. Amt.	Day Wk. Rate	Day Wk. Amt	Office Use Productive	Office Use Non-Prod.
Stop														
Start														
Stop														
Start														
Stop														
Start														
Stop														
Start														
Stop														
Start														
Stop														
Start														
Stop														
Start														
Stop														
Start														
Total Time			Correct _____		Insp't.	Totals								

_____ Foreman

Each Job Must Show Time Started and Finished
Total Must Agree With Time Clock
No More Time Allowed Than Accounted For On Time Cards

②

FIG. 1—FORM FOR MAINTAINING RECORD OF FACTORY EXPENDITURES. FIG. 2—FORM FOR TABULATING TIME RECORD

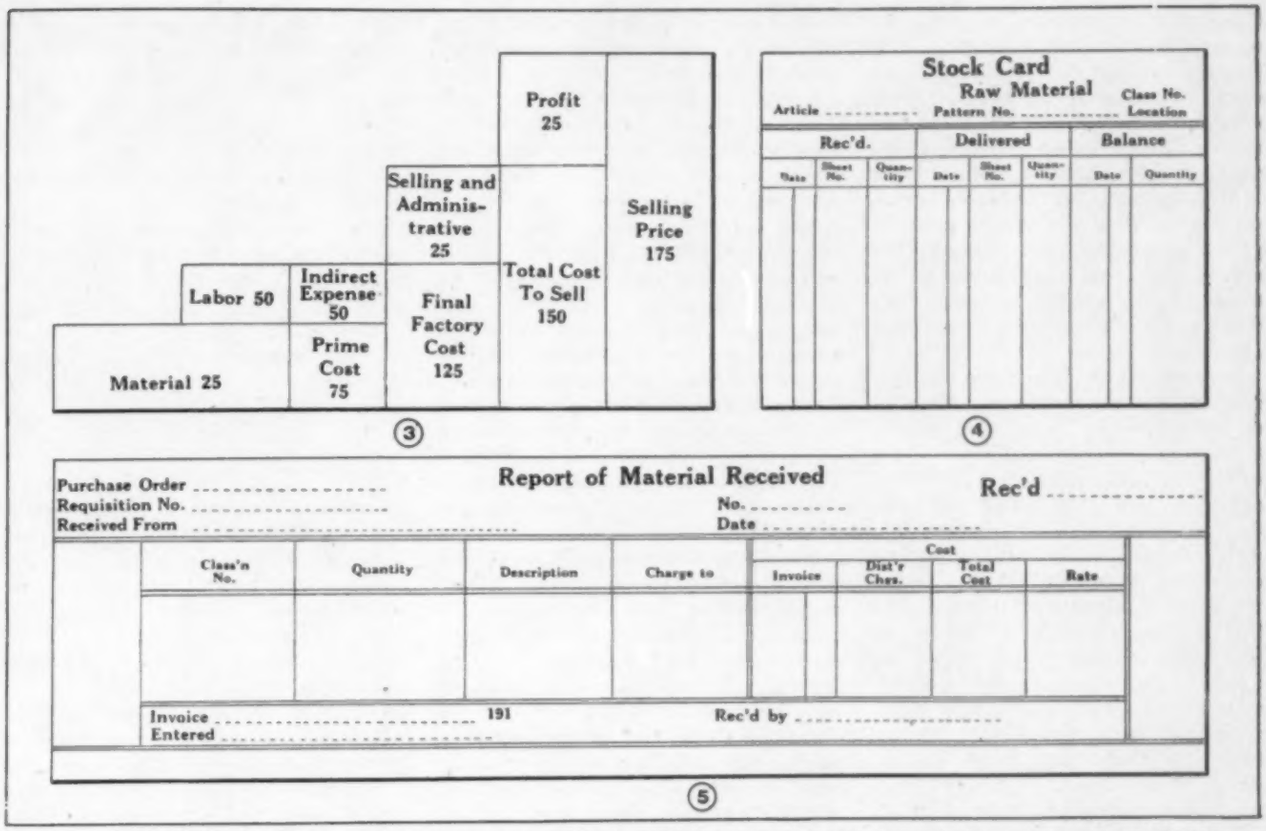


FIG. 3—DIAGRAM FOR COMPUTING COST-TO-SELLING PRICE. FIG. 4—FORM FOR KEEPING RECORD OF MATERIAL ISSUED. FIG. 5—REPORT OF MATERIAL RECEIVED

department. From such records a total of direct and indirect material and labor costs charged to any product, order or article must be computed. To determine the rate of distribution of indirect expense over direct material and labor costs, divide the total amount of indirect expense by the total cost of labor and material for the same period of time. Light, heat and power usually are distributed from one center, and it is necessary to arrive at a ratio in order to secure an approximate cost of each.

If interest is a factor of overhead, the ratio of distribution should be based on the value of equipment in each department, and distributed accordingly over production. To determine approximate maintenance, and as far as possible depreciation occurring in one department, the expense should be charged to the articles passing through that department, the remaining depreciation to be prorated over the whole plant.

In the steel industry, both the product and special order systems are used in cost finding. However, the writer believes the product system finds the most favor, especially in plants where the orders are small and costs uniform.

The personnel of a cost department varies in accordance with the number of operating departments, and may embrace the efficiency department, consisting of time study, rate, standardization, statistical, bonus and organization clerks.

In addition to the regular cost-office force, one large steel corporation maintains in each department a cost clerk who secures all cost data from that department on labor and material costs, losses, etc. These reports are checked with the regular time and production records of that department, results verified and then forwarded to the cost office where they form the basis for computing material and labor costs and for efficiency study.

Little Aids in Selection of Personnel

BY GEORGE E. HOLMES

GREATER and more lasting results will be obtained in the selection of the personnel in industrial establishments if both the psychological and physiological aspects of the situation are given due consideration. Too often the employer centering his attention on the physical side of his problem, to the exclusion of the mental side, leaves this to the direction of some one who has consecrated his life to "the emancipation of the workingman," only to be rudely awakened some morning to a realization that something was overlooked.

The mental attitude of the man should be the very first consideration whether his peculiar viewpoint is the result of his nationality or has been brought about by previous environment. Men will always work best, and remain longer contented in that class of work into which their natural desires would have led them had they been given free choice. Many men will be found working under conditions that are absolutely out of harmony with their mental viewpoints simply on account of fear of being idle or through lack of ability on the

The author of this article is general manager of Industrial Relations Service, New York City.

management's part to place them properly.

During a survey of one of our largest industrial centers, in an effort to relieve the housing situation, the peculiarities of different nationalities was taken advantage of. Efforts were being made to erect sufficient dwellings for the help, but due to a shortage of carpenters and material the management could not get the matter attended to as quickly as needed for accommodating the influx of new help.

Common labor gave the management its hardest problem. Most of the laborers were Poles, and objected most strenuously to being herded into close quarters. Italians were suggested, and this proved a solution, as their national tendency is to live in one room, all herded together like sheep.

In another instance the management of a plant had trouble in holding its help owing to the damp, foggy atmosphere surrounding the locality. In this case Portuguese were suggested, and they solved the problem. Portuguese love salt water fishing, and it is their custom to salt down large quantities for winter use. Having ample scope for activities of this sort, they simply took root on the spot and remained contented.

Other Traits may be Utilized

These illustrations show that certain national traits may be considered to advantage in handling labor. Many others of like nature are available. Traits of character, brought about through religious teachings, public or private schoolings, or through the home life of the worker can be used to an equal degree. In making a physical examination of an applicant, a day or two of habit-study before he is finally placed will accomplish wonders not only in fitting him for his job but in satisfying his personal desires.

If the employment manager will formulate leading questions often in direct opposition to what he hopes the man will answer he will find that he has come upon one of the oldest laws of nature, what we are pleased to call stubbornness. Most every human being in the world can be "sold negative."

It is the most natural thing we do when we take the opposite to any one's statement. In the first analysis it is a heritage from the old law of "self-preservation;" in the second it is ego, and in the third it is curiosity. The latter of the three is commendable because it is a desire on the objector's part for more information, but curiosity sometimes leads one into trouble—we are liable to be misunderstood.

An examination should always be conducted in such a manner that the applicant is freed as much as possible from self-consciousness. It is not always the man who assumes a bold front and tries to impress one with his confidence in himself that makes the best workman. In fact the opposite is usually the case. Gentlemanly conduct or personal modesty often is misconstrued as lack of initiative. The habit-study referred to can be carried on by some member of the employment department passing as a workman, who cultivates the newcomer, and is able to make a first-hand study of him. But what seems to have greater possibilities for securing, placing and holding help in any industry is the idea of calling upon all the employes in the plant to assist.

Plant representation, or industrial democracy as it is called, opens up an avenue for the accomplishment of these things with a permanency that seems without limit. In the institution of the plan, the subject of labor turnover is one of the big items out of which the employes obtain their increased profits.

A report on turnover cost per department is given to the employes, and the company contracts to share equally any savings they are able to effect. This naturally has the desired effect in creating interest on the part of the worker not only to stay on the job but to induce his fellow workers to do likewise.

Bonuses Tend Toward Quality

Quality bonuses also are provided for, and as the profits are based on the joint results from the department, this creates a desire on the individual worker's part for quality, and his attention is turned to helping his fellow workers produce better products. In the event of need for more help, the interest created in the individual department is so great that the workers themselves will endeavor to induce their friends and acquaintances to accept positions in that plant. It is naturally to their interest to assist in the education of their fellow workers to the end of obtaining more products, and of a better quality.

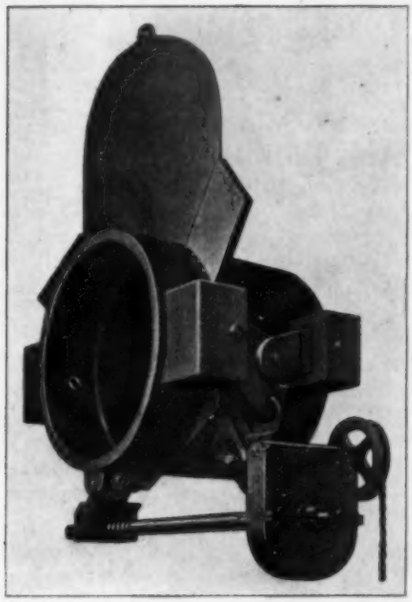
Instances have occurred in plants, where representation plans are in practice, where men have gone to the extent of requesting the foreman to resign his position in favor of some other worker in the department, in an effort to raise the standard of the work and make for better management.

Such cases as this are rare, but it goes to show the extent to which interest has been developed within the rank and file of the workers through the application of ideas that give them a "square deal."

Valve For Gas Mains Is Quick-Acting

PROBABLY one of the most arduous duties which men are called upon to perform wherever blast furnaces are arranged in groups, is shutting off the gas supply of one stack from the common main. This is usually done by means of a goggle valve, which is shaped similar to a figure 8 with one loop open and the other loop closed. The isolation of any particular gas supply is accomplished by turning the goggle so that the blind end is inside the main, bolting the goggle plate to the flanges of the main. This usually entails shutting down the furnace for an hour or two. A crew of from four to six men equipped with gas masks are required to tighten the bolts while a crew of riggers are required to turn the goggle. Recently important improvements have been made in these valves. One of the latest types is shown in the accompanying illustrations. It was designed by Grant D. Bradshaw, B. F. Jones building, Pittsburgh, and it is said it can be closed or opened by one workman from the ground in approximately 10 minutes. One of the features of the valve is that it can be operated without taking the blast off the furnace. The valve consists of two steel sleeves to which the gas main is riveted. The ends of the sleeves, where they join, are faced and make seats between which a steel shut-off plate slides. Instead of bolting these sleeves together through the plate to make a gas-tight joint, as in the ordinary valve, no bolts are used. The sleeves are clamped together and seat on the plate by means of two powerful goggles, one on each side. These grip the plate with a force on the seating surfaces of 2000 pounds per square inch. Usually less than one-tenth of this force is required.

When the valve is to be opened the direction of the toggle action is reversed and almost unlimited force is available to separate the sleeves allowing the plate to slide freely up or down. With such an intensity of force avail-



BLAST-FURNACE GAS VALVE. THE JOINTS ARE MADE GAS TIGHT BY MEANS OF TOGGLES

able for clamping the sleeves together on the valve plate, when the sleeves are separated the plate adheres to one or the other. Two lugs are provided on the inside of one of the toggle levers for the purpose of separating the sleeves from the plate. The valve plate slides between these lugs which also act as guides. When the toggle levers raise, separating the sleeves, one lug pushes off the plate from one seat while the other lug restrains the plate from following the other seat. This is possible by reason of the lugs working on a smaller radius than would correspond to the movement of separation of the sleeves. In this manner there is no possibility of the plate sticking to the seats.

In order that the seats on the sleeves shall be always in alignment the sleeves must operate in a guide. Due to the dirt in the gas a sliding guide is not practical and for that reason the diaphragm type was selected. Two wings are fastened to each sleeve on the sides; they extend out at 45 degrees to clear the valve plate which slides between them. The ends are riveted together, thus forming two diaphragms which permit the valve seats to separate freely, yet keep them always in line. The valve plate is handled by a light cable which passes over a pulley and carries a counterweight. The pulley is supported in a light A-frame carried on pads on the top of the sleeves. The valve is one more step in the safety movement which is receiving ever increasing attention in blast furnace design, for it provides a means of operation which eliminates any possibility of gassing the operator.

Figures compiled by the Metal Workers' Trade Union of Germany show that from the beginning of the war the number of women employed in the metal industries of that country increased from 12,968 in 1914 to 624,688 in 1917, which was 32.5 per cent of the total amount of labor employed at that time.

Tools Formed by Grinding

When forming a high-speed tool from a solid steel bar, it ordinarily is necessary to forge the steel to the shape required. This entails an item of expense for each tool produced, and involves a certain risk due to the development of cracks from careless handling. Some of the larger users of tool steel in this country admit actual losses of thousands of dollars per year through poor workmanship in this connection. Prior to the war, H. Boker & Co., Inc., New York, put on the market special high speed tool steel sections from which it was possible to form tools merely by grinding. These sections are rolled by Jonas & Colvar, Ltd., Sheffield, England. In 1914, the company's importation was stopped by the war and it only recently has been possible to resume deliveries.

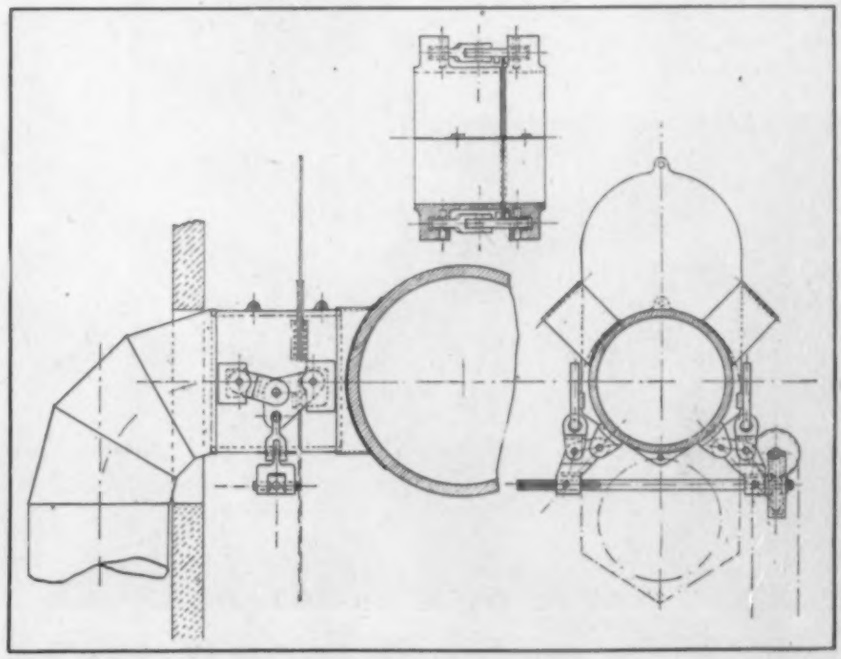
From these sections, practically any desired lathe or planer tool can be made. In order to produce the greatest possible variety of tools, the sections are rolled in I and Z shapes. They are so designed that the cutting edge may be ground on either face and the webs contain enough metal so that in grinding the necessary clearance may be provided.

Chief of the advantages advanced for these tools is the economy afforded by their use. It is claimed that in grinding tools from pieces of I-section, approximately 40 per cent less steel is wasted than where the tool is formed from ordinary solid bar steel. A similar saving of approximately 30 per cent, it is estimated, is afforded when producing tools from Z sections. The I sections are made in four sizes while the Z sections are made in five sizes. The steel is shipped in various lengths and is annealed so that it may be cut by means of a hacksaw, to the desired tool lengths.

French Tin Plate Industry

The tinplate industry in France did not suffice to supply home requirements before the war. The production has increased from 20,000 tons in 1901 to 41,500 in 1910-11, while the consumption had risen from 36,000 tons in 1901 to 52,500 tons in 1910. This production was entirely stopped by the war, and France was dependent upon England for 80,500 tons in 1916.

Although the chief use for the plate is in the manufacture of containers for canned goods, there is also a large trade in ornamental boxes. The jam manufacturers ask for free imports of English tinplate to enable them to compete with their rivals in Spain and Portugal. The English production is quoted as 380,000 tons in 1908 and 954,979 tons in 1915, while the French production in 1908 was only 37,967 tons and in 1915 quite insignificant. It is pointed out that the tinplate industry and also the detinning of scrap must be protected in France if the industry is to be preserved. (*La Nature.*)



LUGS ON THE TOGGLE MEMBERS GUIDE THE PLATE AND BREAK IT LOOSE FROM THE SEATS WHEN THE VALVE IS OPERATED

Plant Builds Jigs and Fixtures

Job-Work Establishment Called on for Special Exertion During the War Now Fills Peacetime Needs—Jigs and Fixtures Must be Made With an Eye to Economic Factors

BY B. K. PRICE

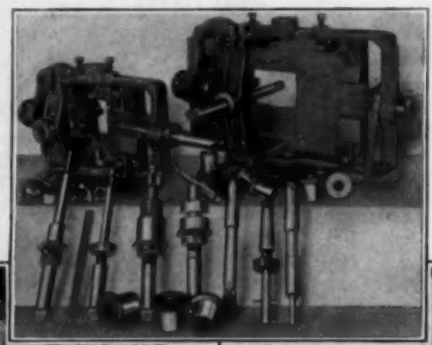
GREAT strides have been made in recent years in industrial organization. This is demonstrated by the growth of the idea of the tool manufacturing plant as a separate and complete unit. In the past, when manufacturers added new products, they were forced to design and build the necessary jigs and tool equipment themselves. This not infrequently worked a considerable hardship. Toolmakers, representative of the highest class of mechanics, were not easily available and costly delays were occasioned in organizing a satisfactory force. Furthermore when the tooling job finally was completed, it became necessary to reduce the force and allow the machinery to remain idle until the next proposition was offered. This constant fluctuation and loss in overhead was not only costly in itself, but it exercised a demoralizing effect upon the entire organization.

While a number of job-tooling establishments have been operating for many years, it was not until the full force of the war was felt throughout industry that the important work of the centralized tool shop became more generally appreciated. The shops then in existence virtually were deluged with work from all sides and so heavy were the demands that new shops sprang up by the score. Many, however, were doomed to failure, owing to the haste with which their forces were organized and to various other factors. With the passing of the abnormal conditions created by the war, a large number went out of existence. However, the services rendered by many such plants throughout the country during the war, has made and left an impression upon industry at large, which makes for them a permanent place in the business world.

One of the more important plants of this character is that of the Mehl Machine Tool & Die Works, Roselle, N. J. This organization was established in 1913 by Walter Bird Mehl. Located in northern New Jersey, it has been brought into touch with the production problems of a wide and varied line of manufacture. The plant, which is of modern, daylight construction, is equipped to accommodate more than 100 operators; and, owing to the special character of its work, the machinery is nearly all of a precision character. The usual factory requirements call for speed and staunchness, but where the construction of gages, jigs, dies and fixtures is involved accuracy is the prime requisite.

The Mehl organization, in addition to the office staff, comprises four departments, namely, the designing, toolmaking, pattern and inspection departments. It is in the designing department that the manufacturer's problem is taken up for transformation into a definite solution in black and white; and it is an important function of the staff of this department to indicate where limits of accuracy should be observed and how close these limits should be.

The pattern shop is complete and patternmakers versed in foundry practice are employed. In the inspection department, the work of the staff differs in an important respect from that of the factory-production inspector, which calls principally for inspection of duplicate pieces. The latter, as a rule, works with a gage designed for the one purpose at hand, and, consequently, his work is semiautomatic. In the job tool shop, however, the inspector must

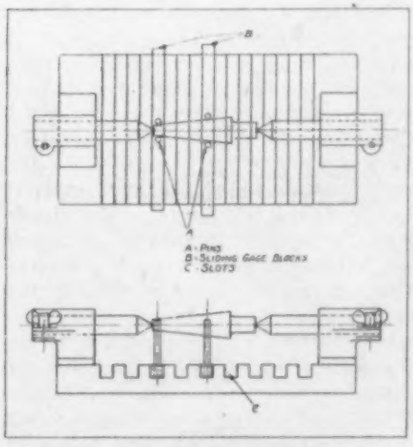


A CORNER OF THE PATTERN SHOP IS SHOWN AT THE LEFT, WHERE PATTERNMAKERS VERSED IN FOUNDRY PRACTICE ARE EMPLOYED. ACCURATE WORK IS ACCOMPLISHED AT INSPECTOR'S BENCH, SHOWN AT THE RIGHT. INSET SHOWS THE JIGS CAPABLE OF DRILLING, REAMING, COUNTERBORING AND TAPPING SHAPER VISES IN ONE SETTING

be a man of judgment, possessed of mechanical experience. It is true that blueprint notations are his main guide, but not infrequently, circumstances arise not provided for on the blueprint and the inspector therefore is left to depend upon his own judgment. A feature of the equipment of this department are several devices designed by the company's engineers for testing particularly exacting work. Several of these are shown in the accompanying illustration. One, the precision taper gage, shown in the accompanying drawing, was developed for the purpose of determining the exact angle and diameter of tapers.

In this taper gage the blocks *B* form a slip fit in slots *C*, which are accurately spaced so that they are 1 inch apart. Pins *A*, all precisely the same diameter, are mounted upon the blocks *B* and are placed exactly in the center of one end of the blocks. When it is desired to ascertain the angle of a taper, the taper is placed between the centers and one of the blocks is placed in each end of one of the slots *C*. Each is moved toward the center until each of the pins *A* come in contact with the taper at its opposite sides. At a point one or more slots distant, the same operation is then repeated, using the other two blocks.

A micrometer measurement, as shown in the accompanying illustration, then is taken between the outside diameters of the pins *A* at each of the two posts and the total diameters of the pins are deducted in each case, which gives the exact diameter of the taper at each point. Since the distances between the two points is definitely known by reason of the accurate positioning of the slots, it is a simple matter to figure the exact angle of the taper in degrees, minutes and seconds, or in inches per foot and also to learn the diameter of the taper at any point to within 0.0001-inch.

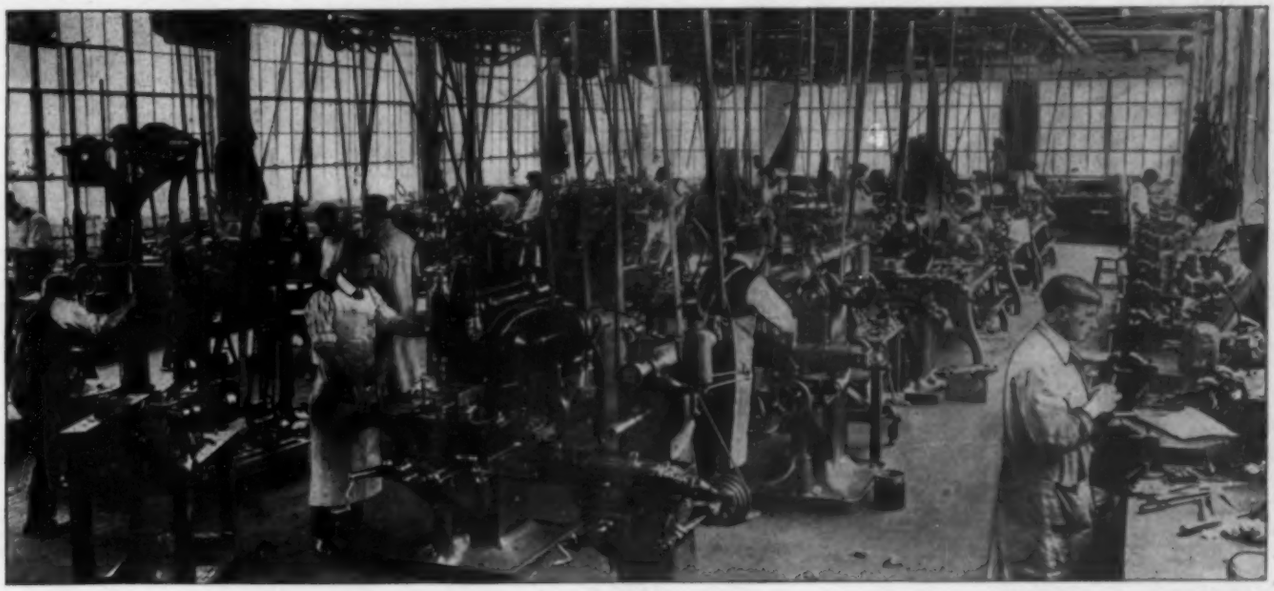


ORIGINAL PRECISION TAPER GAGE

Modern milling fixtures also have been constructed by the Mehl engineers, one of which is a continuous milling fixture. This fixture is designed like a turntable. A rotary table, which swings on a substantial pin at the center, is provided with a number of work holding devices so arranged that the work is inserted at one side of the table, while the cut is being taken at the opposite side. The center of the pin holding the rotary fixture is adjusted off center the correct distance from the milling machine cutter.

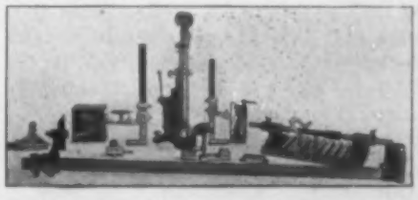
As previously stated, the production of dies, jigs, gages and fixtures, constitutes an important part of the work at the Mehl plant. War has brought home to the industry at large the importance of these refinements. The progress in the use of these aids to production may be aptly illustrated in the case of jigs.

Manufacturers at one time employed skilled mechanics to lay out and drill holes by the surface-gage and prick-punch method, a slow and expensive process. However, a demand for quicker and more efficient production finally resulted in the evolution of the modern drill jig, making possible interchangeable manufacture at a fraction of the old cost. Jigs now are made for drilling a single hole or for accurately drilling, reaming, tapping and counterboring many holes at various angles with but one setting of the work. As the accuracy of the jig influences its cost, it is necessary that judgment be exercised in making it just as accurate as the product demands but not more so.



A GENERAL VIEW OF THE MACHINE SHOP SHOWING DIVERSIFIED TYPES OF MACHINES

Ore containing about 113,000 pounds of tin was mined in Alaska during 1918, according to a bulletin issued by the bureau of mines. Most of this ore came from the York district, Seward peninsula, where one tin dredge was operated. Stream tin was also obtained in this district.



SEVERAL ORIGINAL TESTING DEVICES SHOWING MICROMETER MEASUREMENT

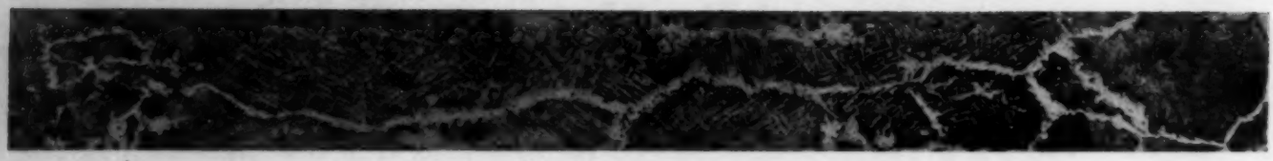


Fig. 1—Micrograph of Cast-Steel Runner Showing Differential Crystallization—Magnification About 30 Diameters

Odd Structure of Steel Runner

A Cast-Steel Sample Examined Microscopically Shows Three Distinct Structures Leading to Conclusion That Differential Crystallization Has Taken Place—Widmanstattian Zone Shows Decarbonization Under the Skin

BY FRANCIS B. FOLEY

IN examining steel under the microscope one is constantly confronted with structures which are difficult to interpret. Recently, in a collection of samples for exhibition purposes, the writer found a piece of open-hearth runner metal 2 inches in diameter which had been fractured for use as a sample of cast-steel structure. On polishing and etching a section of this runner for the purpose of photographing a field to typify the microstructure of steel in the "as cast" condition, a variety of structures was found so arranged as to arouse interest at once. For a distance of about 0.065-inch in from the skin of the runner normal ingot structure was found; this was followed by a zone, about 0.215-inch wide of considerably lower carbon content in which occurred a most pronounced widmanstattian structure; from this point on to the center of the runner the metal was again of normal ingot structure.

Representative samples were taken from the metal in the three zones for analysis the following results were obtained:

	C.	Ni.	Cr.
Metal from skin.....	0.34	1.26	0.63
Widmanstattian zone	0.21	1.18	0.63
Metal from center.....	0.34	1.32	0.67

Such a condition might result from decarburization followed by recarburization of the skin. This section came from one of the branch runners to the bottom of the mold, not from the main runner, and it is difficult to conceive of decarburization occurring in this portion of a runner. If the metal were stripped while quite hot it is true that some oxidation would take place but the recarburization is unaccounted for. It could not occur by segregation after solidification—the tendency then is for diffusion and homogeneity. The following seems to fit the conditions and is offered as an explanation.

The outside layer of normal structure 0.065-inch thick is a layer of metal which was chilled on the walls of the runner brick when the molten metal first entered the runner. As the molten metal flows by, the outside of the stream is cooled by the walls of the runner and crystallization starts, the crystals so formed being attached to the chilled metal on the wall of the runner. These crystals, being the first to form, are necessarily of the lowest carbon concentration. When the wall of the runner has reached a certain temperature, the outside of the flowing stream of metal comes to a fairly constant temperature, and, that temperature being just under the liquidus, solid metal of low carbon content is constantly separating out of the liquid, crystallizing on the walls of the runner. The crystals so formed build outward into the stream as it flows. When the difference in temperature between the solid metal attached to the walls of the runner and the molten stream has become so small that no chilling effect is any longer exerted, the formation of these low carbon crystals ceases or perhaps they grow until such a length that they are no longer strong enough to withstand the force of the flowing metal. After the mold has been filled and the metal comes to a state of rest, solidification proceeds normally and the structure of the interior of the runner is the result. In subsequent cooling in the solid state, some diffusion takes place, but evidently it does not become complete. This diffusion is first materially retarded when the metal of lowest carbon content passes through its Ar_3 point and is stopped completely at Ar_1.

FIG. 2—SECTION OF CAST STEEL RUNNER UNDER MAGNIFICATION OF ABOUT FOUR DIAMETERS

Two Solutions Suggested

The very marked widmanstattian structure in the low carbon band might have been produced in either of two ways, or by a combination of the two. One possibility is that it is due to the fact that the metal where this type of structure is so pronounced existed in the solid state at a higher temperature and for a longer time than the metal elsewhere. Its freezing point is higher than that of either the skin or the center metal, and it did not cool as rapidly as the skin but somewhat faster than the center. The other possibility which suggests itself is that this type of structure formed more readily in the particular part of the runner than elsewhere because of the difference in the processes of crystallization, and that the ferrite needles are actually in the same position which the original low carbon crystals occupied during their formation and growth.

A paper prepared for presentation at the Chicago meeting of the American Institute of Mining and Metallurgical Engineers in September. The author, Francis B. Foley is metallurgist, U. S. bureau of mines experiment station, Pittsburgh and this paper is published by permission of the director of the bureau of mines.

Increasing Life of Electrodes

Main Wear is Found to Result From Surface Burning on Parts Inside of the Melting Chamber—A Seal 24 Inches Above the Furnace Roof is Recommended

SOME interesting facts regarding electrodes were brought out in a paper on large electric steel-melting furnaces read recently at a joint meeting of the British Institute of Electrical Engineers and the British Iron and Steel institute by Victor Stobie. The author brings out the point that the main wear on electrodes in ordinary electric steel furnaces does not take place at the arc but results from the surface burning of the carbon all over those parts of the electrodes which are inside the melting chamber and up to a point about 15 inches above the roof. On looking inside most furnaces the electrodes will be seen to be considerably tapered from where they enter the roof. Fully 75 per cent of the heavy expenditure on electrodes is wasted through this defect.

It is thought by some people not acquainted with electric furnace practice that there is always a reducing atmosphere inside electric furnaces of the older types in use. This is an utterly mistaken notion, which is proved by the ease with which the raw materials charged into such furnaces oxidize, even without the help of iron ore or other solid oxidizing agents.

Gases Escape Through Clearances

The cause of the oxidizing atmosphere inside the older electric furnaces lies in the crude method of feeding the electrodes into the melting chamber. This is usually done by leaving in the roof a number of plain holes equal to the number of electrodes which have to be fed continuously into the furnace, the bricks forming such holes support annular water-jackets which fit new electrodes with a small clearance. The heated gases inside the furnace continuously pass up those clearance spaces between the roof and the electrodes. The results are serious. The hot gases cause the clearance to be rapidly increased by burning away the electrodes; all the heat value of the gases and flames which are constantly pouring out of the furnace through the electrode holes is wasted; the duration of a heat is lengthened in proportion to the heat lost through the roof holes; and the undue heating of the electrode terminals necessitates their being cooled by means of water.

At first sight it may seem a simple matter to close up the clearance between the roof of a furnace and the electrodes passing through it but this is not so, as is illustrated by the fact that there have been few if any devices developed for this purpose. The author proposes a device which he has found to be successful in preventing the wasting away of the electrode by oxidizing gases.

Observations showed that at about 2 feet above the roof in most furnaces the electrodes, even when raised for charging, are seldom at a temperature at which they can burn; therefore, that is the only point at which a permanently good seal can be made round the electrodes. If an electrode is closed hermetically from the roof up to that point, the burning away of the electrode and the escape of the heated gases from the furnace are prevented.

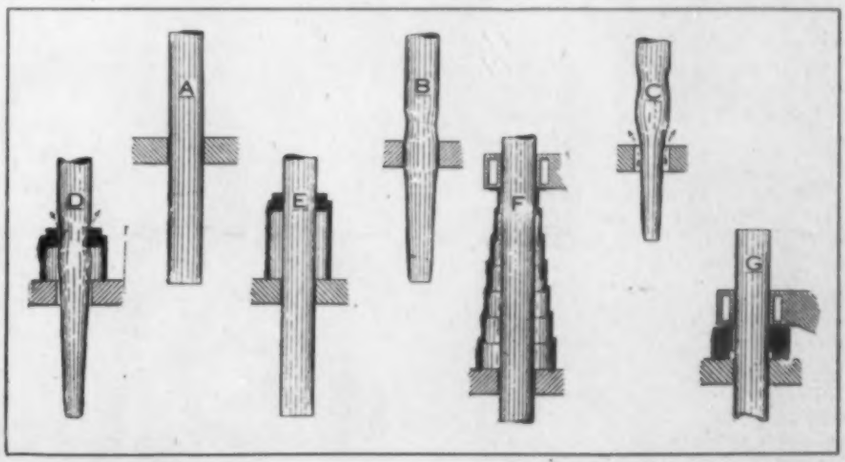
In practice, a light metal cylinder a few inches larger in diameter than the electrode and about 2 feet in length is fixed on the roof around each electrode. The top end of this jacket is covered with a sealing plate which prevents the passage of the flames, the electrode passing through a neatly fitting hole in the center of such a cover. Another form of economizer, as this device is termed, has been developed for use on furnaces which have only a short electrode travel. It is sealed to the electrode in the same way as the economizer just described but differs from it in having a telescopic tube around the electrode.

In the accompanying illustration, *A* shows a new electrode in a roof; *B*, a used electrode burned away inside of the furnace and above the roof; *C*, a burned electrode raised for a fresh charge; *D*, ineffectiveness of seal 12 inches above roof, due to burning away in air of red-hot electrode; *E*, seal 24 inches above roof where it is maintained because the electrode does not get red hot above this point; *F*, telescopic economizer extended; and *G*, telescopic economizer closed.

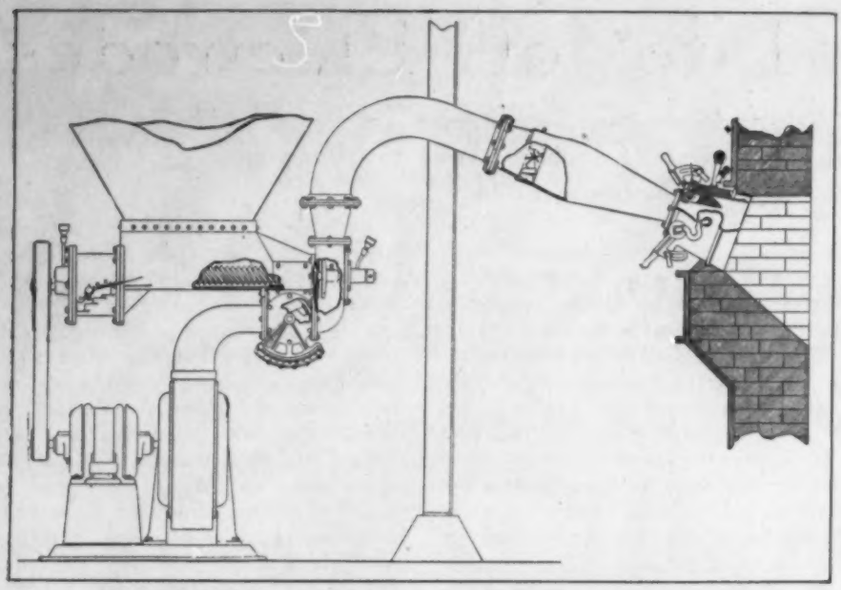
Feeds Powdered Coal Into Furnace

A system for burning powdered coal in furnaces, developed by the Combustion Economy Corp., Nineteenth and Rockwell streets, Chicago, has a number of interesting features. Since high temperatures are obtained and economy in fuel result from burning powdered coal, experiments have been conducted for the past century in an effort to devise a practical method for handling and feeding coal to the furnace in a powdered condition. The scheme in general has been to carry finely divided coal in a sufficient quantity of air to insure complete combustion with small losses due to smoke and inclusions in the ash.

In the accompanying illustration is shown diagrammatically the essential



ILLUSTRATIONS OF THE EFFECTS OF OXIDATION ON ELECTRODES WITHOUT SPECIAL PROTECTION AND WITH VARIOUS ECONOMIZERS



DEVICE WHICH MIXES POWDERED COAL AND AIR FOR FEEDING INTO FURNACE

parts of the new equipment. The coal is first crushed to 1½-inch diameter or smaller, dried, and then pulverized in a roller mill to a fineness such that 85 to 95 per cent of it will pass through a 200-mesh screen. Supply for over 24 hours should not be accumulated as longer storage allows the coal to collect moisture and therefore it becomes more difficult to feed. A hopper holding from ½ to 10 tons is provided near the furnace. Enclosed in the cast iron hopper bottom is a worm feed screw which feeds the entire length of the screw and thus prevents the coal from packing and arching above the feed to interrupt feeding. A revolving disk at the discharge end of the screw breaks up any packing which has taken place along the screw so that the coal is delivered steadily to the mixing chamber.

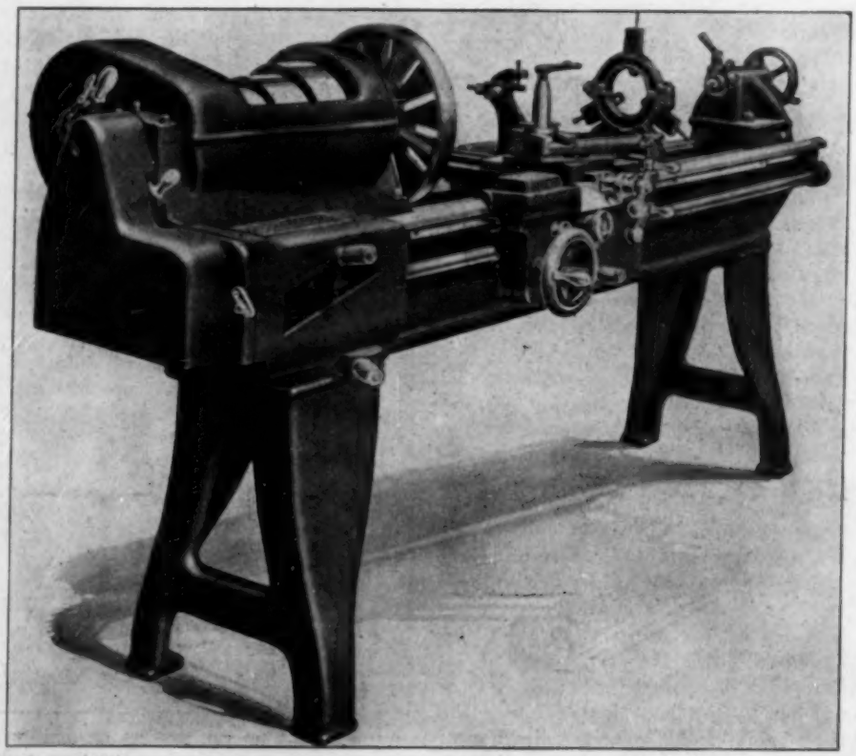
A low-pressure air line fed into the mixing chamber mixes the coal with air and then carries the mixture to the carburetor which may be any place from 3 to 100 feet from the coal control. The low-pressure air supply is usually supplied by a blower connected to a constant-speed motor which also drives the coal control. A speed-change box connected with the coal screw shaft gives accurate control of the quantity of coal fed to the mixing chamber. The speed control is plainly marked for each speed and gives a uniform delivery at that speed. An air gate marked to correspond with the open area of the gate controls the air supply which, it is claimed, may be synchronized with the coal supply so that inexperienced workmen without knowledge of combustion practice may handle them without trouble.

While passing through the line the coal and air are partly carburized but the process is completed in the carburizer in which is placed a stationary fanlike mixer. The outlet of the carburizer is fanshaped and causes the flame to spread across the furnace and to ignite more readily. The nozzle is designed to give the operator complete control of the direction of the flame. Two plates are provided which can be raised or lowered to direct the flame upward or downward or by bringing them closer together, the flame can be lengthened. This adjustment is essential on some furnaces and successful operation sometimes depends upon the ability of the operator to control it.

Engine Lathe Has Quick-Change Gear Box

A light pattern lathe built by the Sidney Machine Tool Co., Sidney, O., is equipped with a quick-change gear box which is attached to the bed in a recess provided. The gears, which cover a wide range of thread cutting and feeding, are shielded from dirt and grit by means of a swinging cover at the end of the bed. This lathe is of the 14-inch size. As shown in the accompanying illustration, the headstock is made with a three-step cone pulley and double back gear, the pulley being locked to the spindle by means of a spring plunger. The bearings, which are ground to standard sizes, are scraped to seat in phosphor-bronze boxes. End thrust is taken up by a hardened and ground steel thrust washer. A positive locking plunger is said to insure the correct position for the gear centers.

The ways are wide and deep to give great rigidity under cuts. An oil trough around the front and the rear of the carriage prevents the lubricant from running down over the apron. The bridge of the carriage is heavy but still not so wide that it becomes necessary to overhang the tailstock arbor for short jobs. The feed rack is of high-carbon steel and is made in one piece, dowel pins and screws securing it to the bed. A back plate making a double walled apron, supports the studs front and rear. All pinions are of steel and the studs are of high-carbon steel.



LIGHT PATTERN LATHE PROVIDED WITH A GEAR BOX FOR QUICK CHANGES

Bronze bushings are provided where necessary. Due to a positive lockout device, the threads and feeding cannot be engaged simultaneously. In addition to being bolted, the apron is doweled to the carriage and has knurls for engaging the longitudinal and cross feeds. Graduated micrometer dials are provided for the cross and angular feeds.

The Power Supply Co., Terre Haute, Ind., has increased its capitalization from $60,000 to $120,000.

British Steel Men Visit American Works

K. D. Mackenzie, general manager, and George West, chief engineer of Fredk. Braby & Co., Ltd., Eclipse Iron & Steel Works, Glasgow, Scotland, have been making a tour of inspection of a number of steel works in this country, especially those engaged in lines of production similar to their own. The Eclipse works is a producer of light plates and blue annealed, black and galvanized sheets up to 31 gage. It consists of 12 mills in two plants, one of which of 7 mills is steam driven and the other of 5 mills is electrically operated. During the last 18 months of the war, one of these mills was devoted to the production of copper plates for the ministry of munitions. The company also operates a tank works, manufactures steel sashes, special types of roofing and other lines, and carries on a structural engineering business. It operates no steel works and obtains its rerolling steel in the open market.

Engine Lathe Has Cast Iron Spindle

TO reduce chattering to a minimum, the engine lathe shown in the accompanying illustration is equipped with a cast-iron spindle. The machine recently was developed by the Wright Works, Chicago. To insure ample strength of the spindle its journals are large in proportion. The front bearing is 16 inches diameter x 24 inches long while the rear bearing is 14 inches diameter x 20 inches long.

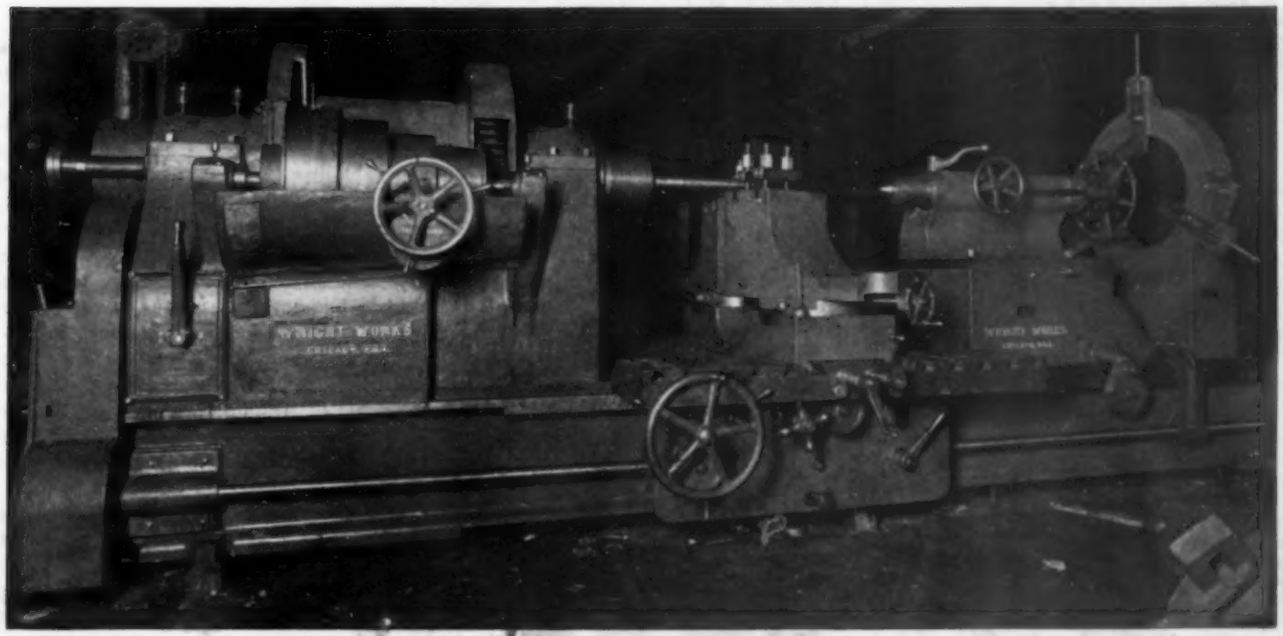
The lathe is driven by an 8-inch overhead belt from a countershaft which transmits 40 horsepower. The lathe is triple geared and all gear changes are made by a hand wheel in front of the cone pulley, within easy reach of the operator. One change is through sliding gears while the others are manipulated by toothed clutches. The speeds are in geometrical progression ranging from 0.75 to 76 revolutions per minute. In all 12 speeds are provided. All gears are steel and the pitch and face width is increased in proportion to the load transmitted in running the lathe at low speeds.

All shafts in the headstock run in phosphor bronze journal boxes and are lubricated by sight-feed oilers. For thread cutting, 24 changes are provided by means of change gears which are incorporated in a quick change box with lever feed. For turning, four feeds of 0.025, 0.05, 0.1 and 0.2 inches per revolution of the spindle are provided. More feeds can be had by changing the regular feed gears with the thread cutting gears.

The carriage is equipped with two compound slides. These are so designed that they may be fitted with a power angular feed. The carriage has a 90-inch bearing on the ways. The apron is steel, equipped with bushings for accommodating the various feed units. The lead screw is prevented from buckling by adjustable supports.

The tailstock is of box design and is readily moved by a pinion that meshes with the feed rack. The tailstock spindle is actuated by a hand wheel. Each machine is equipped with a substantial 3-jaw steadyrest.

The bed is ribbed with box sections and is fitted with a rack over the center rib which engages a pawl on the tailstock. This takes the thrust of the cut from the tailstock clamps and transmits it directly to the bed. The lathe shown in the illustration has a 96-inch swing and is 48 feet long. It takes work 34 feet between centers, weighs 150,000 pounds and is said to be one of the largest engine lathes ever built.



ENGINE LATHE EQUIPPED WITH CAST-IRON SPINDLE

Better Demand

For Refractories — Production Increased—Fire Clay Brick Advanced

Pittsburgh, July 1.—Business in refactories is better than it has been in some time, and while the best demand still is for fire clay brick for relining blast furnaces and rebuilding stoves, a fair volume of orders is being booked for silica and other grades required for open-hearth furnaces. Plant operations are on a heavier scale, for during the recent period of limited output manufacturers made big inroads on their stocks. This had made necessary some speeding up of production, while summer weather also accounts in part for the increase. Plants now are averaging about 60 per cent of capacity, as compared with the recent rate of about 50 per cent.

Competition apparently is keener on fire clay brick than it has been and there has been a general revision of prices on first quality brick, few sales of which from any of the producing districts now are being made at better than $40 per 100, works. On Ohio and Kentucky brick of this grade, $38 now is the top price, and St. Louis manufacturers, while quoting this grade as high as $40, are known to have done business for considerably less. Makers in that district have a stiff freight rate to the East and consequently are obliged to quote low in order to do business outside their regular territory. Prices of second-quality brick have been revised in keeping with the cut in the first-quality grade now on the market.

The inquiry for the brick requirements for the seven 100-ton open-hearth furnaces to be constructed by the Weirton Steel Co., Weirton, W. Va., which are estimated at 4,000,000 brick, is expected to come out shortly.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK (First Quality)	
Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 38.00
Illinois-Missouri	30.00 to 40.00
FIRE CLAY BRICK (Second Quality)	
Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00
SILICA BRICK	
Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50
MAGNESITE BRICK (Per Net Ton)	
9 x 4½ x 2½	$80.00 to 85.00
CHROME BRICK (Per Net Ton)	
9 x 4½ x 2½	$80.00 to 90.00
BAUXITE BRICK (Per Net Ton)	
55 per cent	$ 40.00 base
76 per cent	100.00 base

Using Domestic Manganese Ores in Steel

As the result of an investigation conducted recently by Samuel L. Hoyt of the United States bureau of mines, department of the interior, on the use of manganese alloys in open-hearth steel practice, a bulletin has been issued containing the details of the research. Although the original purpose of the investigation was to determine how domestic manganese ores could be utilized in place of imported ores so that more shipping could be freed for war service, it is believed that the results obtained may be found useful to the steel industry in peace time. Although this country has considerable deposits of manganese, it occurs for the greater part as a low-grade mixture with either iron or silicon or both.

Domestic ores can be utilized in three ways. A molten spiegel mixture may be used for deoxidization and recarburization. Melting and refining the steel bath may be done in a manner insuring a comparatively high residual manganese content of about 3 per cent. Finally, the manganese alloys containing silicon may be utilized. The advantages of the first method are that low-grade or domestic ores can be used in the preparation of the mixture; that deoxidation is accomplished by means of a dilute solution with an increase in the efficiency of the deoxidizer; that the deoxidizer is added in the molten state insuring certain advantages; and that if a large output is desired, the amount of the recarburizer is large and capacity of the plant is increased. The advantages of the second method are that it leads to high-grade and uniform steel; the manganese finals can be added to the furnace with a recovery comparing favorably with ladle additions; and that the same pig iron used for the charge and containing more manganese than ordinary basic iron, can be used to recarburize and partly deoxidize the bath. There is nothing new about the practice of using manganese-silicon ores in steel making. Its use is limited, however, since in steel that is to be welded, silicon should be very low or absent. Silicon is always an efficient reducing or settling agent when used in the customary small amounts, but it may or may not be desirable in finished steel.

Display Tools

Railway Supply Manufacturers Stage Notable Exhibit at Atlantic City

Evidences that the war stimulated rather than hindered the development of machine tools, labor saving devices and machinery of all kinds were found at the exhibit of the Railway Supply Manufacturers' association, Atlantic City, N. J., June 18 to 25. In machinery hall, at the boardwalk end of Young's million dollar pier, was displayed a remarkably representative working exhibit of machine tools and accessories for railroad repair shops. Production tools were prominent and high-speed tool steels played an important part in a number of exhibits. Among the manufacturers who displayed machine tools and shop equipment are the Bullard Machine Tool Co., Bridgeport, Conn.; Cincinnati Milling Machine Co., Cincinnati; Landis Machine Co., Waynesboro, Pa.; Manning, Maxwell & Moore, Inc., New York; Newton Machine Tool Works, Inc., Philadelphia; Niles-Bement-Pond Co., New York; Southwark Foundry & Machine Co., Philadelphia; Warner & Swasey Co., Cleveland; and the Simonds Mfg. Co., Fitchburg, Mass.

The American Car & Foundry Co., New York, through the courtesy of the ordnance department, United States army, showed a mobile machine shop unit composed of a complete line of machine tools mounted on heavy trucks and trailers. This company also exhibited gun mounts and other ordnance material. The Baldwin Locomotive Co., Philadelphia, displayed caterpillar and railway mounts for heavy guns.

Of interest to all manufacturers who use coal or coke were the 100-ton capacity hopper and gondola cars exhibited by the Pennsylvania Railroad Co. The first car of this size was built in 1916 for the Woodward Iron Co. Six-wheel trucks and 6 x 11-inch axles are required to support the loads carried by cars of this type.

A large number of exhibits of material handling apparatus was noticeable. The Clark Tructractor Co., Chicago, and the Elwell-Parker Electric Co., Cleveland, showed various types of tractors for industrial use. Edgar E. Brosius, Pittsburgh, displayed an automatic clam-shell bucket. Hoisting apparatus was exhibited by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.; the Whiting Foundry Equipment Co., Harvey, Ill.; and Yale & Towne Mfg. Co., New York. Nearly 20 steel companies exhibited steel and steel products.

Navy Accepts Suggested Prices

After Careful Investigation of March 21 Steel Conference and Subsequent Events Department Consents to Furnish Order Requisition for 15,000 Tons on Carnegie Steel Co.—5000 Tons Added—Price Inquiry Scouted

WASHINGTON, July 1.—The navy department, as did the railroad administration, has finally accepted the steel prices approved by the industrial board on March 21. Assistant Secretary Roosevelt, who had hesitated to accept the bid prices, which were identical with the board's quotations, in the midst of the board's controversy with the railroad administration, has notified the Carnegie Steel Co. the requisition made upon it May 18 will be supplemented by formal acceptance of the bid price in full. This action, after more than a month of careful investigation, vindicates the industrial board which, following two days' conference with the steel manufacturers' committee, announced the level at which it believed the government and the public should begin their purchasing.

In addition to accepting the Carnegie company's bid on the steel covered by the requisition, 11,000 tons of plates and 4000 tons of shapes, the navy has also awarded to this maker contracts for 5000 tons of steel making up the full 20,000 tons of plates, shapes and bars covered in the original inquiry and on which bids had been received at three different times before the order was served upon the Carnegie company. The requisition was issued under the navy's war powers in order to save the appropriation allowed by congress for four battle cruisers and one fuel ship, work on which was to have been under way by today in order to make use of the funds authorized. The navy has taken precisely the course outlined in these columns May 22.

Studied Market Reports

The navy department's cost inspectors, together with higher officials here in Washington, made a thorough study of steel prices both in the markets at Pittsburgh, Chicago, Youngstown and other producing points, and in the market columns of THE IRON TRADE REVIEW and other iron and steel publications. In addition to this the federal trade commission's costs information was thoroughly canvassed, the result of the entire investigation vindicating the action of the steel men who, under invitation of the government, suggested the proposed price level and the action of the industrial board in approving the schedule. This action, following Director General Hines' acceptance under protest of $47 per ton for open hearth rails, adds plates at 2.65c per pound, shapes at 2.45c and bars at 2.35c to the list gradually being reapproved by subsequent government purchases.

None of the members of the industrial board, which was disbanded through resignations of the members on May 9, have been in Washington since it became known that the navy had formally accepted the suggested prices, but it is evident what their expressions may be. Supporters of the board have at all times maintained that in the end the board's action would be justified and in addition to this the navy approval of the prices, practically all of which were uniform in the bids received, further scouts the possibility of an investigation by the department of justice into the combination alleged by Mr. Hines to have been entered into by the producers to sustain the board's prices.

The railroad administration so far has not indicated its intention to enter the market for additional steel purchases, although it has requested the federal trade commission to investigate the cost of manufacturing rails. This investigation is now under way by the commission, but, unless there are similar requests from the administration or other government departments, it likely will mark the last of these activities by the commission for sometime. Steel costs investigations, which had been carried on monthly from the middle of the summer of 1917, were discontinued on the first of the present year. Making the discontinuance of these investigations almost compulsory is the striking out of the sundry civil bill by the senate appropriations committee of $100,000 from the commission's salary roll.

May Sell Tools To Schools At 90 Off

WASHINGTON, July 1.—Surplus machine tools held by the war department will be sold to trade, technical and public schools and universities and other recognized educational institutions at 10 per cent of their cost value if congress acts favorably on a bill reported to the house by the house committee on military affairs, with recommendation that it pass. The report was made by the author of the measure, Representative Caldwell, of New York, who, at the previous session of congress had introduced a bill recommending that the machine tools be given to the educational institutions. The war department, however, pointed out the large expense it would have to assume if the machine tools were given to the schools and in a letter to the house committee on military affairs, as well as a similar suggestion to machine tool manufacturers in Cincinnati, recommended that the machine tools be sold at 10 per cent of their cost value. Machine tool makers, as well as the war department, favor the bill as amended. A provision in the bill holds the schools equipped with the tools responsible to the United States under regulations to be prescribed by the secretary of war for the proper care and safe return of such equipment when demanded, ordinary wear and tear excepted.

The report of the house committee on the Caldwell bill says:

The schools are sadly in need of these machine tools and few are financially able to buy what they need at ordinary prices. The committee does not know of any better use to which they could be put than the education of the youth of the country, for by this act will be added many native Americans who would not otherwise become so trained. At the beginning of the war one of our greatest needs was skilled artisans of this kind. It was thought best to amend the bill because of the representation of the secretary of war who, in his report to the committee under date of May 31, 1919, said among other things:

"If the tools are loaned, the department remains charged with the responsibility for the care and preservation of the tools until they are worn out. This would involve periodical inspections as in the case of other government property and would be a constantly recurring expense to the government. The war department would have no control over a great number of the institutions to which

these tools were loaned, and it would be difficult to protect the interests of the officers who would remain accountable for this property.

"The method of bonding each institution results in a constant source of annoyance to the school authorities and many schools would prefer not to take tools under those conditions. In any case the loaning of the tools involves constant expense in the pay of a number of officers required for administration. In addition, it has been estimated that the cost of intelligent distribution of these tools would involve an expense of $150,000, and if the project is to be accepted in its present form, it would be necessary to add an appropriation for this amount in order to make the distribution effective."

It was because of this expression from the war department that the bill was amended by which the tools would be sold to the schools at 10 per cent of their cost value.

The committee report said that there is a large quantity of tools to be disposed of and that their public sale would result in low prices, flooding the market and disorganizing the industry. To store the tools would require large expenditures in taking them down, cleaning, oiling packing and transporting them, to say nothing of the continuing expense incident to storage.

In the event the Caldwell bill is passed, which seems to be probable, the war department will be rid of much worry as to the disposition of its surplus tools. The army appropriation bill, as it passed the senate last week, carried an item of $14,000,000 for the salvage board of the war department, which would use part of this money for removing the tools from private plants, slushing them with oil, and packing, transporting and storing them. The house provided only $5,000,000 for the board. Brig. Gen. C. C. Williams, chief of the ordnance department, had asked for $20,653,111.

Contracts Have Moving Clause

In many of the department's contracts it is necessary to get facilities in the way of machines, etc., out of buildings in which they now are located because the contract provides that within a given time these facilities will have to be removed from the premises or buildings owned by the manufacturer. The department has endeavored where possible to sell the machines as they stood in the shop, but General Williams told the senate committee on military affairs that the department had not found that feasible and had not made much progress in that direction. Consequently the machinery has to be taken out, put in fair condition in order to get a better price in the market. This, it was pointed out, means an expenditure of considerable money for handling the machines, for transportation, storage and for the maintenance of the salvage board personnel throughout the country, the board being headed by Col. D. K. Shurtleff.

The comptroller of the treasury has definitely ruled that the money appropriated for the manufacture of ordnance material is not available for the purpose of salvage of material which is to be sold, nor can the money arising from sales be used for this purpose.

General Williams told the committee that the finance department has about $300,000,000 invested in machinery, but that he had no idea what percentage would go to the schools if they are provided with equipment. The department is reserving sufficient of that amount to fully equip the arsenals and is retaining some for manufacturing purposes, taking out the machinery that is worn out and replacing it with new and modern machinery. Until that is appraised, he said, he did not know just what the value is. Colonel Shurtleff, however, estimated the value of machinery and raw materials held by the department to be approximately $500,000,000, this including buildings erected under its jurisdiction. It was stated by Colonel Shurtleff that there are about 156,000 machines in this country, which includes manufacturing equipment of all kinds.

On the average, he said, it cost $15 a unit to dismantle, and in many cases the machines have to be cleaned, slushed with oil and crated and moved. It is necessary, he told the committee, to move practically all of them in the sales being made and in addition to that a great amount of this equipment has to be moved to temporary storage even before it is sold, because it must be taken away from the private plants so they can resume their commercial work.

Want Fabrication Privilege

WASHINGTON, July 1.—Extension of the fabrication-in-transit privilege to include iron and steel when fabricated for frame work and sections for steel ships is being urged upon the railroad administration with renewed vigor by eastern shipbuilding interests. Application was made in February, 1918, but was held up pending settlement of more important problems. Since the signing of the armistice, however, efforts have been put forth again, first with the division of traffic and now with the public service division, and an early decision may be obtained.

Steel shipped from the Pittsburgh district to the Philadelphia district for bridges, tunnels and buildings takes a rate of 24.5 cents with an additional charge of 1.5 cents for the fabrication privilege. Similar steel from Pittsburgh to Philadelphia, or the Delaware river shipbuilding district, when intended for ship construction, takes a rate of 40.5 cents. Extension of the fabrication privilege would mean a difference of 14.5 cents per 100 pounds, or from 60 cents to $4.20 per ton, depending upon the location of the steel mills and the fabricating plants, as regards Delaware river shipyards.

The net saving to the shipbuilders of the United States annually would approximate $60,000,000, it is estimated. The railroad administration of course would lose that amount and just now, when its financial troubles are paramount, this item is probably the main reason why the shipbuilders are experiencing delay in getting action upon their application. They point out, however, the railroad administration is losing an opportunity to promote the commerce of the United States, which they expect would ensue upon the extension of the privilege to ships.

Low On Steel Work

Washington, July 1.—With a bid of $403,936, the McClintic-Marshall Co., Pittsburgh, submitted the lowest bid to the bureau of yards and docks, navy department, for erecting a crane runway involving 3600 tons of steel for the shipbuilding ways of the New York navy yard. The company offers to make delivery in 180 days. The Bethlehem Steel Co. put in a bid of $427,000, delivery in 200 days, and the American Bridge Co. submitted a bid of $449,000, delivery in 180 days. The bids were opened on June 25.

The bureau of supplies and accounts opened bids today for about 3600 tons of plates, 1000 tons of shapes, and a small tonnage of bars for a repair shop at the Puget Sound navy yard.

The Chicago Ferrule & Nut Co., 880 Lill avenue, Chicago, has increased its capitalization from $40,000 to $100,000.

Short-Day Labor Schedule Hit

Investigation of National Industrial Conference Board Shows Production is Decreased by the Adoption of 48-Hour and 50-Hour Weeks in the Metal Working Plants—Few Report Gain of Output

THAT adoption of a 50-hour week by the metal manufacturing industries could not be done without a noticeable loss in production, is the conclusion reached in a report just issued by the national industrial conference board, Boston. This investigation includes the metal trades proper, foundries, automobile, hardware, electrical equipment and some miscellaneous establishments. The report states that it is possible for a proportion of establishments to maintain production on a schedule of 50 hours per week, but states, "that such a schedule could not be universally adopted without some loss in production."

In the case of a 48-hour week a much smaller number of establishments reported production maintained, and the report holds "that notwithstanding the fact that reductions to such a week proved satisfactory from a production standpoint in a sufficient number of cases to invest such a schedule with a high degree of interest, the weight of the evidence leaves little ground for doubt that a general reduction to a 48-hour week at the present time would mean a serious loss in production."

In establishments where a large percentage of the work is performed by automatic machinery the evidence gathered, indicates that in general, maximum production cannot be had on a schedule as low as 48 or 50 hours per week. No significant change in the health of the workers resulting from shorter hours, was developed by the investigation, but it was found that health conditions among the workers were relatively favorable judged by the average hazards of industrial employment.

What could and would will be done on a 50-hour schedule is pointed out by the report. Much depends on the degree of co-operation between the management and the workers. "No single factor," says the report, "could do more to accomplish good results, than the recognition by workers of the indisputable principle that their real interests for bettering their condition lies in increasing the efficiency of individual production.

"If both management and workers would actively co-operate to this end, a 48-hour week might prove practicable in a larger number of establishments than is now the case. But unless such co-operation is secured the general adoption of a 48-hour week in the metal trades would involve a serious economic loss to the nation."

In the course of the investigation two questionnaires were sent out, one in the latter part of 1917 and the other in March, 1919. Replies were received from 1247 establishments employing 755,534 workers. Of these, 409 establishments employing 361,371 workers, had reduced hours and furnished data as to the effects of such reductions.

In the case of the 48-hour group, covered by the 1917 returns, the establishments reporting an increase in production had more than two-thirds of the total number of workers. It is significant, that 16 establishments, none of which were of unusual size, reported either an increased or a maintained output under the shorter schedule. Of 66 establishments which reduced to a 50-hour week, four reported increased production, 28 as maintained and 34 as reduced.

The results of the 1919 inquiry are less favorable to the practicability of a 48-hour or a 50-hour week. So far as the 48-hour group is concerned the number of establishments maintaining or increasing production was small. In the case of the 50-hour week, the result was similar, 11 establishments showing they held or maintained production, against 24 reporting a loss. The report states that due to the fact that the metalworking industry during the time the 1919 questionnaire was sent out, was in a somewhat demoralized state, because of the signing of the armistice and efforts to get back on a peace basis, the evidence gathered by the 1917 questionnaire is a safer criterion of the practicability of a shorter week schedule than that obtained through the 1919 questionaire.

A striking feature of the report is the rather general satisfaction with a 50 or a 48-hour week, expressed by manufacturers who had reduced to such schedules. Of the 40 establishments which had reduced to a 50-hour week, 29 expressed a preference for such a schedule, while of 40 who had reduced to a 48-hour week, 20 favored this schedule and 10 others a 50-hour schedule. It is shown that 93 per cent of the establishments investigated are open shops.

This report is the fifth thus far issued by the board in the course of an extensive investigation of the effect of reductions in hours of work on output, and on the health of workers in the various major industries.

War-time Labor Agencies Go Out of Existence

Washington, July 1.—Effects of congress' policy of retrenchment were apparent during the week ended June 28, when the national war labor board and several other bodies dealing with labor problems organized for the war, went out of existence. In the case of the war labor board, action by the President is still necessary to make its dissolution complete, although there are no funds for it.

No more cases will be accepted by the board. Those now under consideration will be submitted to the joint chairmen or a section of the board. All administrative duties in connection with any cases not settled will be transferred to the department of labor.

Other labor agencies which ceased to exist include the investigation and inspection service, the working conditions service, and the information and education service of the department of labor.

Train Foremen Class

The Taylor-Wharton Iron & Steel Co. of Easton, Pa., has inaugurated a special course of training for its foremen to improve production and labor relations in its plant. A study group has been organized under the direction of John E. Calder, of the Business Training Corp., New York, and W. M. Henderson, superintendent, to take up a course in modern production methods. An additional object is to develop competent understudies for the foremen among the more ambitious employes.

The class is studying plant layout and routing, purchasing, stockkeeping and storekeeping, reduction of waste, production records, cost accounting, labor turnover, the selection, training and supervision of employes, discipline, safety and sanitation.

Peace Problems Sober Sentiment

Stock Market Marks Time as Peace Comes—Many Uncertainties Loom in the Economic Horizon—Necessity of Sending Producing Goods to Europe Plain—Business Activity Ahead—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

WALL STREET joined with the country as a whole in receiving with composure the news of the formal closing of the greatest and most destructive of all wars. This was natural in view of the fact that the event was precisely what had been expected. Moreover the actual dawn of coveted peace is not without its sobering effect. America, in common with a vast portion of the rest of the world, finds itself confronted with tremendous problems, hardly less difficult of successful solution than those of the war itself.

Contemplation of some of those problems—the present state of unsettlement in the world, uncertainty as to the future economic and political developments in Europe, the questions of labor and of credits for stricken Europe and of trade with the central powers—was sufficient to check any outburst of demonstration, even though the people had not exhausted all the enthusiasm and feelings of relief upon the signing of the armistice in November. Though of gigantic proportions, these problems are not of an insuperable character and none believes that they may not be satisfactorily solved.

As for the stock market, it displayed a tendency to mark time. Two things have combined to check the upward flight of the level of share quotations; the high call money rates, resulting from the adverse attitude of the federal reserve board toward runaway speculation; and the coming of peace. The treaty had long been a tangible objective of the bull movement, and with this accomplished the market finds itself under the necessity of finding a new basis for enthusiasm. This it doubtless will do in connection with the crop prospects and promise of unprecedented industrial activity.

America Has Needed Goods

Viewed economically the most outstanding fact shining forth in the post-war period of the coming months is the urgent world need for goods of every description. To this country, and to the rest of the world as well, the most important fact subsidiary to this, is that America is the only available storehouse of food and goods, and also the only nation with sufficiently unimpaired credit resources to supply these goods on credit to temporarily-impoverished peoples.

American financiers and business men, no less than the leaders in Europe, see the absolute necessity of providing the countries of Europe with food and goods in order that their people may get back to work and their industries again may be put upon their feet. Otherwise, idleness, non-production, extreme want and the inevitable consequence of bolshevism, must prevail. Europe must be supplied on long time credits, and definite announcement of the details of a plan being worked out by American financiers may be expected soon. This plan will point the way for the whole country to co-operate.

The proceeds of Liberty bonds were spent for engines of destruction. War represents economic waste upon a grand scale. The debentures of any corporation that may be formed to finance exports to Europe will be sold in order that machinery of production may be purchased. The money thus spent will set millions at productive, not destructive, tasks. It will help rebuild the shattered economic structure, and bring back prosperity to poverty-stricken lands. In this way, and this way only may Europe be put in a position to pay the enormous interest upon her debt to us. In the meantime the money spent for this purpose will keep our own expanded capacities busy, our export trade flourishing and the country in an era of undisputed prosperity. It is important that imports of productive goods, such as building materials, tools, agricultural implements and railroad equipment be permitted by Europe. French thought, at first inclined to the exclusion of foreign goods, now is swinging around to see that production is the great need and that to attain this, productive goods are indispensable. England is still inclined to maintain restrictions.

Probably the most difficult problem facing America is that of wages and labor. No surplus of labor is apparent in the immediate future. The heavy emigration of aliens returning to Europe will create a shortage of common labor, which will tend to lift the level of all wages.

To counteract the emigration of aliens, there may be an immigration movement from Europe of people desirous to escape the burdensome taxes. The condition of the labor supply, the insistent and never-ending demands of employes for higher wages with shorter hours, and consequently less production and the world shortage of goods creating a "scarcity demand" for food and materials, may keep the prices of commodities moving up for some months. That the advances of wages are ahead of the cost of living, is made apparent by the lavish spending for luxuries and expensive commodities of all kinds, now universally reported by retail stores.

Central Assets Shown

Current assets of $7,588,341 and total assets of $13,701,282 are shown in the financial statement of the Central Steel Co., Massillon, O., as of April 30. The property account is figured at $6,764,896. Investments in National Pressed Steel Co. amount to $982,125 while deferred charges to operation, prepaid interest, insurance and taxes amount to $38,001. The liability account shows accounts payable $1,240,537, notes payable to banks, $2,948,510; merchandise payable, $329,397, and deferred credits of $12,607, making gross liabilities of $4,531,052. There is $2,131,300 preferred and $1,969,300 of common stock outstanding, $1,801,583 reserve for taxes and $61,042 for new buildings and $3,207,003 in undivided profits, leaving net assets of $9,170,230.

War Causes Losses

War work done by the Standard Parts Co., Cleveland, required extensive readjustment of the plants and made it necessary to go into the surplus to meet dividend requirements, the annual report of the company shows. Net profits for the year ending Dec. 31, after deduction for taxes and contingencies, amounted to $1,261,419. Dividend requirements were $1,270,315, or $5894 more than the net profit earned. It was stated that the company operated

to about 75 per cent of capacity on war work. All but about $600,000 of a total of $1,632,892 in government claims outstanding on Jan. 6 has been paid. Officials report that orders are coming in on a large scale and that the plants are operating at capacity, with the exception of the axle plants, which will be doing likewise when tools are made.

Radiation Profits Good

The annual report of Steel & Radiation, Ltd., Toronto, Can., for the year ended Dec. 31, 1918, shows profits from operations almost double that of the previous year amounting to $556,191. Interest charges were $74,727, leaving a net profit of $481,464, compared with $213,516 in 1917. The balance at profit and loss at the beginning of the year was $49,803, making a total credit of $531,267. From this were deducted preferred dividends in respect of 1917, $46,529, transferred to depreciation and amortization reserve, $299,090; provision for reduction and inventory against falling prices of material and restoration of plant to resume peace business, $175,000; a total of $520,619, leaving a surplus for profit and loss at the end of 1918 of $10,647. President Sir Henry Pellatt, in his statement to shareholders says that the liquid position of the company is vastly improved; for the year 1917 there was a surplus of current assets over liabilities of about $125,000, while the present statement for 1918 shows a surplus of $332,614.

To Distribute Stock

The Charcoal Iron Co. of America has announced a 20 per cent stock dividend in lieu of the regular cash disbursement. At a meeting called for July 31 shareholders will vote on the directors' decision to increase the capital stock from $2,839,350 to $5,000,000, out of which increase the stock payment will come, the balance to go into the treasury for future requirements. In his statement to stockholders, President Frank W. Blair said the action was decided upon because of the fact that cash is tied up in inventories, which June 1 were $650,000 in excess of the amount on Jan. 1, a condition due to the difficulty of moving finished products. Practically all of the heavy inventory is covered by orders, according to the president. The company's pig iron situation has improved and earnings are fully up to expectations, he says.

Government Sells Steel

Various offerings of government-owned steel continue to be made. Bids will be opened at Rochester July 7 on 533 tons 1 x ⅞-inch carbon steel; 786 tons 3½ per cent nickel steel, and 294 tons soft steel; on July 9, 1997 tons 155-millimeter forgings and 685 tons 75-millimeter forgings; on July 10, 104 tons steel plates, assorted sizes; on July 11, 1857 tons sheet steel billets; on July 12, 59 tons head forgings for 75-millimeter shrapnel and 178 tons 2 11/16-inch cold rolled round steel bars; on July 15, 398 tons round cold rolled screw stock, assorted sizes; 49 tons 150 x 6¼ x 93¾-inch cold rolled strip steel; 32 tons ⅞ x 2-inch hot rolled forging steel; 1070 tons 9.2-inch steel base plug forgings and 2989 tons 9.2-inch shell forgings.

Philadelphia is offering for bids on July 3, 108 tons 11/16-inch squares; on July 7, 161 tons 1 11/16 and 5/8-inch rounds. Detroit will take bids until July 3 on 488 tons 75-millimeter common steel forgings; on July 7, 155 tons semisteel scrap castings and 397 tons 75-millimeter shell forgings.

Andrews Steel Additions Increase Ingot Output

An extension to the plant of the Andrews Steel Co., Newport, Ky., which increases the ingot capacity of that plant by about 8000 tons a month, recently was completed and now is in operation. Work which included excavations, foundations, two 100-ton basic open-hearth furnaces, charging floor, building storage bins, the installation of a mechanical gas producer plant, ash and coal handling equipment and the rearrangement of all railroad and stock tracks, was under the direction of the S. R. Smythe Co., Pittsburgh, consulting and contracting engineers.

The mechanical gas producer plant consists of five Morgan mechanical producers. The Smythe company also rearranged the gas producer plant of the company for the blooming mill, soaking pits, changing the gas system from underground to overhead. By this change the gas is conveyed from the producers entirely over the top of the blooming mill building with downtakes, headers and connections embodying a number of new features as to soot catchers and insulation. New soaking pit furnaces have been built embodying the patented ideas of H. E. Smythe. These furnaces have no checkers for the gas, but are arranged for checkers in the air chambers only.

Considers New Stack

Chicago, July 1.—The Steel & Tube Co. of America is considering plans for an additional blast furnace stack at the South Chicago plant of the Iroquois Iron Co. The size and design of the stack and its location have not yet been definitely decided but it probably will be as large as or larger than the one erected more than a year ago.

Prices Firm

In Market for Coke Oven By-Products —Sulphate Inactive

New York, June 28.—Although considerable strength is manifested, prices in the eastern coal tar products market remain unchanged. Pure benzol, for which the demand continues heavy, is still holding at 24 to 28 cents, and 90 per cent benzol at 23½ to 27 cents. Toluol and solvent naphtha are quoted at 25 to 35 cents and 22 to 27 cents, respectively, and owing to a good movement of these products, in conjunction with the heavy buying of motor benzol, of which they are a component part, supplies are exceedingly scarce.

Spot phenol is now available in better quantity and the market on this delivery is pretty clearly defined at 9½ to 10½ cents per gallon. Contract shipments are being booked at the same level. Trading in naphthalin continues to slump off, the drug trade now being virtually out of the market. Nevertheless, the market on this product is unchanged. Naphthalin in flakes for spot and contract business is quoted at the producers' plants at 8½ to 9½ cents, and in balls at 10½ to 11½ cents.

The market for sulphate of ammonia is still inactive. Sellers, however, are hopeful that the fertilizer industry will come into the market shortly. In the absence of any domestic business the market continues nominal. Prices on the little foreign business booked appears around $4.85 for material in double bags.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	0.09½ to .10½
Naphthalin, flake	0.08½ to .09½
Naphthalin, balls	.10½ to .11½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

Contract

Per Gallon at Producers' Plant

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	$0.09½ to .10½
Naphthalin, flake	0.08½ to .09½
Naphthalin, balls	.10½ to .11½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	nominal

Commercial Treaty With America Favored in France

Yesterday Today and Tomorrow in European Industry

BY FRANCIS MILTOUN

Paris Correspondent of The Iron Trade Review

PARIS, June 13.—The Paris and provincial Republican committee of commerce, composed of the "Republican" senators and deputies of the French parliament and provincial counsellors, has indorsed a motion, on the basis of a report by Monsieur Havey, of the customs committee, urging that an immediate commercial convention be signed between France and the United States to develop and augment commercial exchanges between the two countries.

This convention is intended to make amends for errors committed in 1910 in surtaxing a large proportion of American products, while the tariff convention with Germany, of which there is nothing said in the peace treaty, allows that country to export to France on a minimum tariff basis, to the detriment of the United States.

This is something that every American ambassador to France, every consular officer, and the American Chamber of Commerce at Paris have been working for, but without success, or without having made any appreciable progress, since the original decree was made. The reform, however, is now near achievement and it is believed that it only is a question of time before its adoption.

As a rider the project carries with it a "rectification of tariffs in comport with the constantly rising costs of most of the necessities of modern life." Certain products which the United States and France previously bought of Germany are desired to pass under a regime which shall transfer the surtax to them, thus permitting French and American merchants and manufacturers to arrive at an understanding as to a reciprocal "most favored nation" basis which hitherto has been absent from Franco-American relations.

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Belgium Orders Rails

The Belgian State railways have just ordered 40,000 tons of rails. The circumstance demonstrates that Belgium itself already is in production. The price quoted was a trifle less than 500 francs per ton. For a moment it was a question of placing this order in the United States or England but time presses and actually with local furnaces lighting their fires, notably Cockerill at its Marchienne au Pont plant, it was deemed good business and good politics for Belgium to handle this business itself. There is a big project in view for the electrification of Belgian railways almost in their entirety, looking to a normal speed of 60 to 80 kilometers an hour. This presumes that many bridges, road-beds and rails will be laid anew, the work beginning with those portions which have suffered most under the intensive service rendered during the war. The first line to be electrified will be Brussels-Antwerp, the second Brussels-Charleroi, arriving ultimately at Luxembourg.

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Report Wire Orders

The "Revue Metallurgique" cites an instance of German manufacturers reporting a big demand for iron and steel wire in spite of the cessation of hostilities, the period covering the past three months; furthermore that these demands come from allied countries by "indirect" solicitation. Whether this is true or not is a question. Since it is a German report it is believed to be significant. The following prices quoted as of May 1 in Germany may have some bearing on the productiveness of German plants: Wire, 550 marks per ton; plates, 660 marks; pig iron, 440 marks; billets, 475 marks; profiles, 520 marks, and bars, 550 marks.

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Revive Douai Foundry

The Wauthy foundry at Douai which was transferred to Eu during the period of the invasion, now has been returned to the former city with a considerable program of extension. Bronze castings for ship work, locomotives and electrical machinery are to be its specialty, with a department devoted to the casting of bells. A new property acquired since the armistice will enable this foundry and forge to become one of the most important and highly specialized of the Douai region.

* * *

Promote Electro-metallurgy

Hydraulic power is to be developed intensively in the France of the future. The metallurgical industry especially is interested as the production of electric steel throughout mid-France and the mountainous districts around Grenoble and in the Rhone valley will bring a new and prosperous industry and a decentralization which in every way is desirable. French industry of all kinds previous to the war largely was centralized, to its detriment. The fact that so much of the metallurgy of France was flanking the eastern frontier actually brought about its devastation. Of the costs of production of steel in electric furnaces there

is a wide divergence of opinion, as recent discussion in the French parliament has shown. The largest scheme projected is to use the torrential Rhone as it flows out of the Lake of Geneva down through mid France to the Mediterranean. A convention soon is to meet at Grenoble to discuss the procedure of harnessing the Rhone but curiously what may well be called a snag has been encountered. The fact is water cannot be drawn from the Lake of Geneva by the Rhone at a rate which will reduce the lake level below 372 meters above sea level. This was arrived at by an international agreement in 1884. The Rhone project which has been studied in all its details by the inspector general of Ponts et Chaussées provides for an expenditure of 900,000,000 francs, and a like outlay to care for the demands of navigation in the shape of new locks, bridges, etc. The use of the portion of the upper river between Lyons and the Swiss frontier alone it is expected will effect an economy of 5,000,000 tons of coal annually.

* * *

Krupps In Holland

The *Matin* publishes a report from its correspondent to the effect that the Krupp Works of Essen are about to erect a gigantic plant at Appledoorn in Holland. The plans are already completed and the land necessary already acquired. Naturally products from the Krupp Dutch works will go forth into the world as of Netherlands origin, though the plant will be connected with the iron of the Ruhr and the coal of Westphalia. Shipments will be readily made through the great port of Rotterdam, which has always been the predilection of Germany to the detriment of Antwerp, which has been at a disadvantage because of Holland controlling the Scheldt. It is only an indication of the way the wind may blow some day, but it does look as though it was in the Dutch quarter. Belgium won't like it, neither will France, neither will England. I wrote some weeks ago of the phenomenal growth of the metal trades of Holland during the war period, some seven fold increase in capital. Does this mean a new industry for Holland on a big scale, backed by German capital and nourished with German raw products, leaving a minimum of benefits to the Dutch? No one knows as yet but all the world will speculate.

* * *

Poland's Steel Needs

The economic council figures out that Poland's needs in iron and steel are insistent if that country is to be put into immediate condition to take care of itself, to say nothing of a future expansion when the time comes. The need of the moment is for 240 stationary steam engines (18,600 horsepower), 3000 dynamos, various metals, excluding iron and steel, 2700 tons, steel for machinery parts 1700 tons, copper 5000 tons, aluminum 200 tons, iron and manganese ore 600,000 tons, pig iron 400,000 tons, rolled iron —plates, etc., 300,000 tons.

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Steel Plate Bureau

The Comptoir Sidérurgique de France—the metal sales office, has been inaugurated under the auspices of various metal groupments, but is virtually a distinct organization. It is to deal only with plates and large shapes and is under the direction of Monsieur Fournier, of Schneider et Cie. It will begin operations July 3, and will be the organization which will practically make the market price for plates. A similar organization was in operation from 1894 to 1904 under the sales managership of Monsieur Vital Hucguet, who is to occupy a corresponding post in the present organization.

Another sales bureau to occupy itself with "merchant steel" products on similar lines is in a way of formation but will not be ready for business for some weeks yet. Virtually these organizations are an exemplification of the trust, or combination or cartel idea, not only for export trade but for delivery and distribution at home. Orders placed will be handed out to members best fitted to produce the goods economically and expeditiously, with a view also to the geographical situation of the place of production and delivery.

* * *

To Make Tin Plate

The Longwy ore field was one of the most sorely tried districts of the war, and may be said to have marked the only victory to the credit of the crown prince. It was a declassed fortress at that, so it was not much of a victory. Today, it having been brought into such prominence, all its population and industry is spurred to a new effort. The Longwy Steel Works, the Aciéries de Longwy, are about to undertake the production of two new lines—corrugated construction iron and tin plates. France produced very little of either of these specialties in the past. The Mont Saint Martin plant of this company has already put its blast furnaces into operation along with a new rolling mill and an open-hearth furnace. The production is to be confined to large castings for naval and other industrial works. A great difficulty in getting the plant into operation at once is that of recovering essential working parts which were carried off to Germany as loot, but, remarkable as it may seem, much of this has been found and identified and a very great effort is being made to get into full production before autumn.

New Plant

For Columbia Motors to Double Capacity—Other Detroit News

Detroit, Mich., June 30.—A modern new plant is being planned for the Columbia Motors Co. to provide 150,000 square feet of floor space and double the present production capacity. The site containing six acres is located at Boyd street and West Jefferson avenue. J. G. Bayerline is president.

The Paige-Detroit Motor Car Co. is completing factory additions which are to give a total of 15 acres of floor space, according to President Harry M. Jewett.

The Detroit Radiator Corp., organized 10 months ago with an authorized capital of $300,000 to manufacture auto and airplane engine radiators, has purchased a 4-acre site at Royal Oak, Mich., for its new plant. The company manufactures the Curran radiator designed by E. T. Curran, president of the company. Headquarters are at 435 Woodward avenue. H. H. Rowe is general manager.

The Steel Products Co. of Detroit and Cleveland has purchased the $250,000 site and plant of the Parker Rust Proof Co. of America in this city. The plant includes four buildings constructed three years ago and contains 65,000 square feet of floor space. The Parker organization will move into new quarters.

The Fisher Body Corp. is having plans prepared for a 6-story reinforced concrete and steel sash building.

The Hupp Motor Car Corp. is running 50 per cent behind on its production schedule for 1919 which calls for 18,000 cars. The company has 2500 unfilled orders.

The McCord Mfg. Co., one of the largest manufacturers of automobile radiators in the world, has issued $1,500,000 of first mortgage bonds to provide for expansion of its local plant. A bond issue of $500,000 is also being marketed for the extension of the Chicago plant.

The Shuler Axle Co., Detroit, contemplates the erection of a plant second in size only to that of the Timken-Detroit Axle Co. Authorized capital has been increased from $200,000 to $500,000.

Recalls Concessions On Sulphur

American Society for Testing Materials in Annual Meeting Votes to Stiffen Acceptance Requirements—Metallurgists Discuss Deep Etching of Rails and Making of High-Speed Steel

A RULING of great importance to the manufacturers and users of steel products was made by the members of the American Society for Testing Materials at its twenty-second annual meeting, held at the Hotel Traymore, Atlantic City, N. J. The concessions made by the society in 1918 by increasing the rejection limits of sulphur and phosphorus were recalled in the case of 29 specifications and action on 14 other specifications was deferred. The action of the society was governed by the belief that some of the difficulties in obtaining certain materials exist now as in 1918 when the note, which reads as follows, was applied:

> *"In view of the abnormal difficulty in obtaining materials in time of war, the rejection limits for sulphur in all steels and for phosphorus in acid steels shall be raised 0.01 per cent above the values given in these specifications. This shall be effective during the period of the war and until otherwise ordered by the society."*

The specifications affected by this note in 1918, classified according to their present status, follow:

Specifications From Which Note is Removed

Designation	Specifications for
A 2 12	Open-hearth steel girder and high tee rails.
A 4 14	Medium carbon steel splice bars.
A 5 14	High carbon steel splice bars.
A 6 14	Extra high carbon steel splice bars.
A 49 15	Quenched high carbon steel splice bars.
A 50 16	Quenched carbon steel track bolts.
A 51 16	Quenched alloy steel track bolts.
A 7 16	Structural steel for bridges.
A 8 16	Structural nickel steel.
A 14 16	Carbon steel bars for railway springs.
A 58 16	Carbon steel bars for vehicle and automobile springs.
A 59 16	Silico-manganese steel bars for automobile and railway springs.
A 60 16	Chrome-vanadium steel bars for automobile and railway springs.
A 68 18	Carbon steel bars for railway springs with special silicon requirements.
A 17 18	Carbon steel and alloy steel blooms, slabs and billets for forgings.
A 18 18	Carbon steel and alloy steel forgings.
A 19 18	Quenched and tempered carbon steel axles, shafts and other forgings for locomotives and cars.
A 20 16	Carbon steel forgings for locomotives.
A 21 18	Carbon steel car and tender axles.
A 22 16	Cold-rolled steel axles.
A 63 18	Quenched and tempered alloy steel axles, shafts and other forgings for locomotives and cars.
A 57 16	Wrought solid carbon steel wheels for steam railway service.
A 25 16	Wrought solid carbon steel wheels for electric railway service.
A 26 16	Steel tires.
A 29 18	Automobile carbon and alloy steels.
A 70 18*	Boiler and firebox steel for stationary service.
A 71 17*	Carbon tool steel.
A 32 14	Cold-drawn bessemer steel automatic screw stock.
A 54 15	Cold-drawn open-hearth steel automatic screw stock.

Specifications to Which Note Still Applies

Designation	Specifications for
A 1 14	Carbon steel rails.
A 3 14	Low carbon steel splice bars.
A 67 18*	Steel tie plates.
A 76 18*	Low carbon steel track bolts.
A 9 16	Structural steel for buildings.
A 10 16	Structural steel for locomotives.
A 11 16	Structural steel for cars.
A 12 16	Structural steel for ships.
A 13 14	Rivet steel for ships.
A 15 14	Billet steel concrete reinforcement bars.
A 27 16	Steel castings.
A 28 18	Lap-welded and seamless steel boiler tubes for locomotives.
A 52 18	Lap-welded and seamless steel and wrought iron boiler tubes for stationary service.
A 56 18	Iron and steel chain.

Note:—*Indicates tentative standard.

Report On Steel and Wrought Iron

RARELY does a technical session in a convention of engineers and scientific men attract the attendance and sustain the unabated interest which was accorded the meeting on steel and wrought iron of the American Society for Testing Materials held Wednesday morning, June 25, at the Hotel Traymore, Atlantic City, N. J. The reports of two committees, one involving unusually important revisions in the specifications for a great number of steel products, were acted upon. Papers dealing with modern high-speed steel and the etching of rails and forgings brought forth 12 written discussions which contributed greatly to the interest of the session.

Upon the invitation of Capt. Robert W. Hunt, who presided over the meeting, J. A. Capp, chief of testing laboratories, General Electric Co., Schenectady, N. Y., as chairman of the committee on steel submitted a lengthy report covering the numerous activities of that committee during the past year. An abstract of the report, containing practically all of the important changes recommended by the committee, was published in the June 26 issue of THE IRON TRADE REVIEW.

Referring to the note added to a great number of specifications in 1918 providing that the rejection limits for sulphur in all steels and for phosphorus in acid steels be raised 0.01 per cent above the values given in those specifications, Mr. Capp stated that the conditions which necessitated the addition of the note still exist in regard to certain materials. Therefore the committee recommended and the society approved that the note be removed at once from 29 specifications and that action on removing it be deferred until the next annual meeting in the case of 14 specifications. The specifications affected by this ruling are listed in tabular form on this page. Chairman Capp also

announced that a committee composed of the chairmen of the subcommittees of the committee on steel has been created for the purpose of co-operating with the United States bureau of standards in thoroughly investigating the effect of phosphorus and sulphur on steel so that future revisions in specifications can be based upon more recent and complete data than are now available.

The report of the committee on wrought iron was presented by its chairman, H. E. Smith, engineer of tests, New York Central railroad, Washington. The committee recommended revisions in the specifications for engine-bolt iron and proposed tentative specifications for extra-refined wrought iron bars, both of which were adopted by the society. The changes in the specifications for engine-bolt iron involve the inserting of the words "all pig" before the word "puddled," making the section read, "The iron shall be made from all pig puddled iron and shall be free from any admixture of iron scrap or steel." The proposed specifications just adopted as tentative for extra-refined wrought iron bars were prepared to cover large rectangular bars used in the construction of locomotives. The iron described in the present specifications for refined wrought iron bars is not of the quality desired, especially with reference to the raw material, while the requirements of the present specifications for engine-bolt iron are too severe for rectangular bars of rather large dimensions.

Discuss Deep Etching of Steel Rails

PROMINENT metallurgists discussed the subject of deep etching introduced by F. M. Waring, who read a paper entitled, "Deep Etching of Rails and Forgings," by F. M. Waring and K. E. Hofammann. In this paper, which was published almost verbatum in the June 26 issue of THE IRON TRADE REVIEW, the authors present the results of some deep etchings with hot acid on new and old rails and infer that the cracks developed to visibility by this process may have been caused in the mill during some stage in the fabrication of the rails. The discussion was focused upon the factors influencing the development of the cracks revealed by the deep etching.

J. A. Capp suggested that the cracks are the result of gas pressure set up by the acid added to the internal strain of the metal. James E. Howard, interstate commerce commission, Washington, supported the contention that the cracks had their origin in the mechanical treating of the metal during manufacture. A series of investigations in which X-ray photographs of specimens are used in connection with deep etching was advocated by W. P. Barba, production division of ordnance department, United States army. J. S. Unger, central research bureau, Pittsburgh, asserted that the only way to distinguish good rails from bad is to etch a number of new rails; separate them into two classes, supposedly good and supposedly bad; place them in service and check their performance with the conclusions drawn from the etchings. A number of these discussions are presented in abstract form as follows:

Rate of Acid Attacks

By J. S. Unger

Whether the conclusion of Messrs. Waring and Hofammann to the effect that the defects shown in the rails have their origin in the manufacture of the material remains to be proved. We have been investigating rails to determine the rate of acid attack in the three dimensions; the transverse vertical from a disk section taken from the end of a rail; the transverse longitudinal, taken from a disk section at the interior or under side of the longitudinal slab; and the vertical longitudinal disk section taken from the interior of a longitudinal slab cut from the side of the rail.

In the few experiments made up to this time, the action of the acid has been found to be four times as rapid in the transverse vertical disk, or that from the end of the rail, than on either of the longitudinal specimens. When such specimens of the same area taken from the same rail and as closely adjacent as possible, are immersed in the same solvent at the same time, the difference is apparent at once by the rate of the evolution of the gas. If transverse sponginess exists in a rail which is not visible to the eye or under the microscope and this be developed by the etching solution and the action of the solvent is four times as great in one direction as in another, the extent of such sponginess is greatly magnified leading to erroneous conclusions as to the extent of the supposed defect.

A certain railroad has purposely removed several good rails from the track and cut them up for examination. Of these good rails some were found to show supposed defects after etching, while others were free from such defects. All showed longitudinal lines in the direction of rolling. Additional rails removed from the track were defective, some having transverse fissures. These were etched and the etchings were practically the same as those from the good rails.

In the face of such conflicting evidence, it appears unwise to draw any conclusions as to the detrimental character in service of a rail which has shown sponginess during etching.

The only solution of the question as it now stands is to take a number of new rails and etch them. Separate them into two classes, supposedly good and supposedly bad. Place these rails into the same service at the same time, alternating the rails as laid and from their average track service, determine what ones are good and what are bad. Until this is done, conclusive evidence to warrant drawing conclusions will be lacking.

Does Gas Cause Cracks?

By J. A. Capp

It is common knowledge that when hardened steel parts, such as springs, are pickled in acid, they frequently break up. Some years ago there were several papers on this subject published in the *Proceedings* of the American Electrochemical society which purported to prove that the breaking of the hardened steel springs was due to the absorption by the steel of the hydrogen liberated on the surface of the steel by chemical action of the pickle bath. The explanation given was that atomic hydrogen penetrates freely into the steel; in fact, it passes through such thin sections as spring steel. Wherever the atomic hydrogen finds sufficient room in the steel to unite with other atomic hydrogen to form the molecule of hydrogen or H_2, enormous pressure is set up. When the steel is already in a highly strained state the additional strains set up by the internal pressure developed by the formation of the hydrogen molecules is sufficient to rupture the steel. As further evidence it is pointed out that annealed steel, which is free from internal strain, is not ruptured by the internal gas pressure.

The articles examined by Messrs. Waring and Hofammann are of fairly hard steel and the methods of manufacture of them are such that an in-

ternally strained state may be expected. The acid used is strong and it is very active at the temperature employed. May it not be the case then that the fissures which develop are result of the gas pressure added to the internal strain? It would be interesting to test two adjacent specimens, one of them to be pickled in its hard state and the other to be pickled after annealing. If the explanation offered in this discussion is correct, the hard specimen should crack and the annealed piece should show no cracks.

Advises X-ray of Steel Before Etching

By W. P. Barba

As to deep etching and its use in determining the possible presence of fissures, either developed or potential, a great deal of work was done by the army ordnance office in the manufacture of gun forgings in 1917 and 1918. Deep etching with quite strong sulphuric acid with some hydrochloric acid developed surely the locus of what later developed into fissures as well as flakes. Many times flakes are incipient fissures, becoming fully developed upon later application of breaking force, especially when suddenly applied, as when fractured under the drop test.

Later work at the bureau of standards, carried on by Mr. Rawdon under Drs. Burgess and Stratton, caused us to resort to the Upton Lewis alternating-stress machine, using pieces 6 x 2 x 0.375 inches, stressing them only to about 30,000 pounds per square inch and using as many as 30,000,000 alternations. Mr. Rawdon applied the Coolidge tube to these pieces before, during and after rupture. The experiment was primarily started to see if known small flakes or incipient fissures would "run" or develop as in a detailed fracture under repeated stressing within the elastic limit. It was found that they did so develop and quite appreciably.

When Messrs. Waring and Hofammann displayed their work, it was at once evident that a similar method of research might well disclose the presence or absence of such steel defects as result in rail fissures. The deep etching can be applied after the Coolidge ray exposure, thus determining if the cause is a simple one or more complex as has been discussed by J. A. Capp.

Steelmaking is Secret of Good Tools

IN the absence of John A. Mathews, president, Halcomb Steel Co., Syracuse, N. Y., his paper on modern high-speed steel which appeared in the June 26 issue of THE IRON TRADE REVIEW, was summarized by C. L. Warwick, assistant secretary of the society. In the discussion which followed, practically all of the speakers agreed with Dr. Mathews on his statement that improvements in the method of steelmaking, rather than changes in the analyses of steels have been responsible for the progress made in high-speed tool steel during the past 15 years. Several metallurgists differed slightly in regard to the value of certain additions to steel, particularly cobalt. The heat treatment of the steel came in for considerable discussion, and it was the unanimous opinion of all speakers that too much attention cannot be given to the subject of uniformity in treatment. The need of standardization in this respect was emphasized by George L. Kelley, engineer of tests, Nicetown plant, Midvale Steel & Ordnance Co., Philadelphia. J. Heber Parker, metallurgist, Carpenter Steel Co., Reading, Pa.; N. B. Hoffman, metallurgist, Conolian Steel Co., Pittsburgh; W. J. Baxter, captain, United States navy, and Edward W. Rettew, assistant metallurgist, New Departure Mfg. Co., Bristol, Conn., discussed Dr. Mathews' paper. Abstracts from a number of these discussions follow:

Urges Standardization

Mr. Rettew presented the results of three months' study of a considerable number of analyses of high-speed steels representative of present American practice. As a result of these investigations the following limits and desired analysis were prepared:

Element	Limits (per cent)	Desired (per cent)
Carbon	0.60-0.70	0.65
Manganese	0.15-0.40	0.30
Phosphorus	not over 0.015	under 0.010
Sulphur	not over 0.015	under 0.010
Silicon	not over 0.30	0.20
Chromium	3.50-4.50	4.00
Tungsten	16.00-18.00	17.00
Vanadium	0.65-1.05	0.85

Continuing, Mr. Rettew stated that he firmly believes that if steel manufacturers and users will concentrate on the standardization of raw materials, melting practice, forging and annealing processes and methods of treatment and grinding involved in the manufacture and use of a high-speed steel which lies between the limits above indicated, aiming to attain the desired analysis, that truly remarkable improvements very likely will be attained.

Describes Cobalt-Chromium Tool Steel

A paper of considerable interest prepared by the bureau of construction and repair, United States navy, was presented by Capt. W. J. Baxter, captain, United States navy. The paper deals with a new kind of high-speed tool steel, samples of which were obtained from the mills of Darwin & Milner, Sheffield, England, by Lieut. S. E. Woodworth, bureau of ordnance, United States navy. This steel has been investigated in comparison with well known brands of tungsten high-speed steels and the data obtained forms the basis of the paper in question. One series of tests was conducted at the Brooklyn navy yard by William Campbell, consulting metallurgist, on samples of the steel in the form of a ⅞-inch octagon forged bar and a cast milling cutter 4 inches in diameter and ¼-inch thick. The octagon bar analyzed as follows: Chromium, 13.57; cobalt, 3.66; molybdenum, 0.84; carbon, 1.48; silicon, 0.80; and manganese, 0.19 per cent.

Hardness determinations were made by heating both samples to various temperatures in a small electric furnace, one piece being quenched in oil and the other cooled in air. The test on the forged bar showed that hardening begins at 850 degrees Cent. and reaches a maximum at 1000 degrees Cent., the hardness being practically the same whether the material is cooled in air or in oil. The tests of the cast metal show slightly higher values, with a maximum at 1000 degrees as in the case of the forged metal.

In a second investigation made at the bureau of standards at Washington, cast and forged samples were submitted to comparative tests with tungsten high-speed tools. The description of these tests is presented in detail in the paper. Tests of milling cutters made from the English non-tungsten steel and tungsten steel were made to compare the qualities of the steels in actual performance on a belt driven milling machine. Both cutters made an unusually good record, compared with current experience with the best grades of high-speed tool steel. While the tungsten

cutters were slightly superior to the cobalt-chromium cutters, the performance tests indicated that under slightly different conditions, their mechanical performance probably would have been about equal. The results seemed to indicate that when production is of secondary importance in comparison with precision, the nontungsten tools compare favorably with tungsten high-speed tools, but where the main purpose is to secure production, tungsten high-speed tools must be considered preferable.

Corrosion of Sheets

CONSIDERABLE discussion over the methods of testing corrugated iron sheets for corrosion developed during the Wednesday evening session. The report of the committee on corrosion of iron and steel was made by its chairman, F. F. Voorhees, chemist, United States bureau of standards, Washington. The report of the subcommittee on inspection contained data on the condition of corrugated test sheets which have been exposed at Fort Sheridan, Ill., Annapolis, Md., and Pittsburgh.

Following the report of this committee, D. M. Buck, metallurgist, American Sheet & Tin Plate Co., Pittsburgh, read a paper on the influence of very low percentages of copper in retarding the corrosion of steel, which was presented in abstract form in the June 26 issue of THE IRON TRADE REVIEW.

A. F. Robinson, bridge engineer, Atcheson, Topeka & Santa Fe railway, Chicago, stated that after witnessing tests of No. 26 gage corrugated sheets at Gary, Ind., he concluded that from 0.15 to 0.25 copper in steel retards the rusting of the metal; that all soft steels rust after exposure to the atmosphere; that there is no such thing as an absolutely rustless iron or steel; and finally, that it is not worth much extra expenditure to obtain chemically pure iron or copper bearing steel when the sole protection from rust is due to galvanizing, paint coating or other method of treating for protection.

A. S. Cushman, director, Institute of Industrial Research, Washington, entered into a lengthy discussion focussed principally on the methods pursued in conducting the tests described in the report of the committee on corrosion of iron and steel, and those mentioned by Mr. Buck. He said that rain and fog bring down on the inclined surface of the sheets very dilute sulphuric acid washed out of the air and that wind and sun evaporate the water, concentrating the nonvolatile sulphuric acid on the uncoated sheet until it is strong enough to etch into or cut the surface.

Continuing, Dr. Cushman said that if uncoated sheets, when newly exposed, meet a slow rusting attack for the first six months, either on account of environment or on account of comparatively good weather, they have the opportunity to grain themselves with a tight granular dehydrated oxide surface which in itself is a natural protective coating and enables the sheet to show an extraordinary long life out of doors. If, however, the initial attack on the raw uncoated sheet is very severe, as it was in the Pittsburgh case, because of the exceedingly acid atmosphere, the grain formed is loose and instead of being protective, is stimulative to corrosion.

For the first time in the history of the society, considerable importance was attached to magnetic analysis, the major part of the Wednesday evening session being devoted to a topical discussion on that subject. Abstracts of the papers, "Magnetic Analysis as a Criterion of the Quality of Steel and Steel Products," by Charles W. Burrows and Frank P. Fahy, and "Magnetic Surveys on New and Failer Rails," by P. H. Dudley, appeared in the June 26 issue of THE IRON TRADE REVIEW. A paper entitled "Application of Magnetic Analysis to the Testing of Ball-Bearing Races," by R. L. Sanford and M. F. Fischer, was read by Mr. Fischer. "Location of Flaws in Rifle Barrel Steel by Magnetic Analysis," by R. L. Sanford and W. B. Kouwenhoven, was presented by Mr. Sanford; and "Certain Aspects of Magnetic Analysis," was read by C. Nusbaum. At the conclusion of the reading of the papers listed, N. J. Gebert, New York, submitted a discussion, illustrated by lantern slides, showing the relation between the heat treatment and magnetic properties of tool steels. Dr. Unger discussed the entire series of papers on magnetic analysis, stating thoroughly the requirements which must be met by any form of testing apparatus and setting forth the advantages of magnetic testing.

Obtains Interesting Data on Malleable Iron

Upon the recommendation of the committee on malleable castings, the society, at its Thursday evening session, decided to adopt as standard, the specifications for malleable castings which have been carried as tentative since their proposal in 1918. The new standard applies to malleable castings for railroad, motor vehicle, agricultural implement and general machining purposes.

H. A. Schwartz, chemist, National Malleable Castings Co., Indianapolis, read a paper entitled, "Some Physical Constants of Malleable Cast Iron."

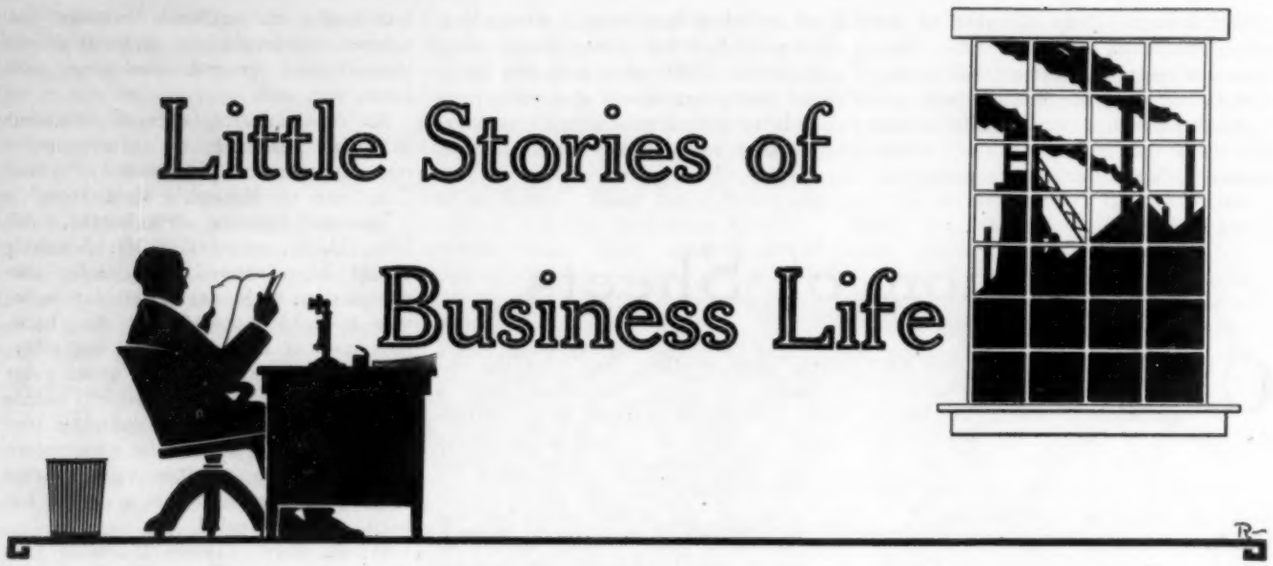
Enrique Touceda, metallurgist, Albany, N. Y., stated that Mr. Schwartz should have entered more fully into the question of hardness tests for malleable iron. He pointed out that hardness tests of steel, gray iron and alloys in general have proved of great value and are widely used. Professor Touceda regards hardness tests on malleable iron by either the Brinell or the schleroscope methods to be of little value, except to indicate whether or not a casting has been under-annealed.

W. R. Bean, Eastern Malleable Iron Co., Naugatuck, Conn., said that he has records of several thousand tests which substantiate the data submitted in Mr. Schwartz's paper. Mr. Bean also mentioned tests made on a heavy section of malleable to investigate its physical properties. A test piece 3 inches square and 12 inches long was annealed in the regular way with light castings. Nine test pieces were cut from the same section of the bar; one at each corner, one at each side and one in the center. The bars from the corners had a tensile strength ranging from 45,914 to 45,450 pounds per square inch; the bars from the side, from 41,489 to 43,866 pounds, and the center bar, which naturally would be expected to be the weakest, had a tensile strength of 39,839 pounds per square inch. Mr. Bean summarized a number of tests made on bars which were tested as cast, and of duplicate bars which had $\frac{1}{16}$ inch machined off the surface. Two bars were cast from each of 58 heats, those tested in the rough being $\frac{5}{8}$ inch in diameter and those machined being turned to $\frac{1}{2}$ inch. The results of these tests are as follows:

Condition of bar	Elongation per cent, in 2 in.	Tensile strength, lbs. per sq. in.
Rough, maximum	22.0	58,263
Rough, minimum	8.0	51,333
Rough, average	12.8	53,259
Machined, maximum	23.0	60,060
Machined, minimum	8.5	50,241
Machined, average	13.2	53,234

At the Thursday morning session the executive committee reported its decision to move the headquarters of the society from the University of Pennsylvania to the Engineers' club, Philadelphia. A committee was appointed to negotiate for these quarters. Approximately 650 men and almost 200 ladies attended this year's meeting. Among the entertainment features was the annual golf tournament, held Thursday afternoon. Prizes were won by R. E. Griffith, H. M. Kinney, W. D. Lober, G. D. White and A. S. Hook.

Little Stories of Business Life



The Spirit of Morgan

A BRONZE bust of J. Pierpont Morgan has been installed in the board room of the United States Steel Corp., at 71 Broadway, New York. Mounted upon a stained pine column, the bust enjoys an impressive elevation at a spot along the southern wall of the room, overlooking the board table, and immediately opposite the seat of Chairman E. H. Gary at the head of the table. To the observer, there is something singularly appropriate in placing the dead financier's likeness in the chamber where are decided the policies of the gigantic industrial offspring which he fathered with so much pride, and the thought also occurs that the directors and the members of the finance committee at their meetings through the long future, always will have a sort of subconscious feeling that it is in Mr. Morgan's presence that they are shaping the destiny of the corporation. The bust, which is the work of J. Massey Rhind, the New York sculptor, reflects the light from the western windows of the room, and depicts the power and virility of Mr. Morgan in his prime.

Lucky Strikers

A DECISION just has been reached in an important matter at Newburgh, N. Y., which possibly may serve as a precedent for deciding all kinds of business problems and particularly during the hot summer months just ahead. A few weeks ago, the union sheet metal workers in Newburgh went on strike for an increase in pay to $5.40, whereas their employers thought that $5.25 was enough. On being brought together by an agent of the state department of labor, it was suggested that the dispute be settled by flipping a coin. This method of settling the controversy was accepted with acclaim and by the toss of the coin the strikers won their case. The men therefore went back to work.

Crittenden to Front

THE steel industry obtains a large percentage of its fluorspar requirements from the district of which Marion, Ky., is the center. In Crittenden county, in fact, of which Marion is the seat, the principal industry is the mining and shipping of fluorspar. In the victory loan campaign, the Crittenden county liberty loan committee obtained a huge oversubscription with the result that it was given the privilege of naming a vessel to be launched from the huge government yard at Hog island. Accordingly, the committee decided to name the vessel FLUORSPAR. The good ship FLUORSPAR took the water at Hog island on June 16, its sponsor being Miss Frances Gray, of Marion, Ky.

Youth Wins

THOUGH the manufacture of iron and steel goes back into the mists of antiquity, to Tubal Cain, the fourth man from Adam, it is a new industry in its present state. On a visit to a large steel plant recently an observer commented on the average youth of the men in charge of departments and mills and the absence of gray hair in the force. "So much of our practice is new," explained one of the heads, "that the younger men have grasped it more readily and therefore have occupied the positions." There seems to be no place for the man who cannot advance at the speed the industry has set. Changes in practice are rapid and what was excellent yesterday will not earn dividends today. The rare man who can keep abreast of this tide may stay in the harness until snow touches his temples but for the most part young men take the lead.

Blowing off Steam

AMERICANS are not the only people in the world having a penchant for investigations by commissions, and the ridiculous situations sometimes developed have counterparts in other countries. Describing the proceedings of the British coal commission, the *Birmingham Chamber of Commerce Journal* says:

"We had the opportunity of spending an hour in the king's robing room at the house of lords a few days ago, when the duke-and-earl baiting was about to commence. If the consideration of the future policy of the country were to be placed in the hands of other commissions of this kind, then we should despair of the result. If, on the other hand, the purpose of the coal commission is to provide a safety valve for the letting-off of steam, and this is successfully accomplished, then it does not so much matter. Mr. Justice Sankey has a difficult team to handle, in any case, and he seems to be satisfied if he can prevent the room becoming a beer garden. * * * Mr. Smillie asks a question, the witness answers, and the miners' leader contradicts the witness. Then Mr. Smillie tries to tell the witness what he ought to say, and if he refuses, he is

probably made the subject of some uncomplimentary remark."

Flying Talk

EVERYONE in the iron and steel business who has occasion to travel realizes how much a train telephone connection will increase his range of activity. It seems likely from investigations which now are being carried on by the McFarland Train Telephone Corp., of New York, that it soon will be possible to conduct telephone conversations from rapidly moving trains with the same facility as from one's desk. Several weeks ago a section of the Philadelphia & Reading railway's tracks between Tabor Junction and Jenkintown, Pa., was wired for experimental purposes, and it was found possible to carry on a conversation between a moving train in Jenkintown and the railroad offices at the Reading terminal in Philadelphia. Two trains from the Reading terminal now are equipped with telephones and valuable results have been achieved which will aid in leading to the development of practicable train telephoning apparatus. Officials of the Philadelphia & Reading railroad say that with the coming of the train telephone that can be used in everyday work, practically every train will include it as a part of its equipment.

Shades of Opinion

"Colors are an important factor in export transactions in many parts of the world which is not generally understood," says a leading Cleveland manufacturer of industrial haulage and handling equipment who does a large overseas business annually. "Take India for instance," he said, "one could not think of sending to certain districts a machine or product which is painted red because that color is held in reverence by the Mohammedans as it signifies to them the blood of the martyrs to their religion. Similarly green is a sacred shade to the Hindoos for the reason that it symbolizes the grass upon which the Hindoo martyrs were clain. Now black to Australia is essentially the mark of mourning. It is said there are no black automobiles in Australia. The other side of the picture is the importance of blue as applied to any product for which negotiations may be carried on with Cuba. Anything that is painted blue, it has been found, obtains a better price in Cuba because of the shade. It is these curious twists of fancy and sentiment and the various peculiarities of different peoples that make export trade so fascinating and demands such deep study to be successfully pursued."

Buy Cleveland Foundry

After seeing the Taylor & Boggis Foundry Co., Cleveland, grow from a plant employing five workmen to one with approximately 500 men on its payroll, C. J. Morgan retired as president last week, when he and his associates disposed of their interests to a Cleveland company headed by I. T. Kahn. Mr. Kahn is president of the Republic Structural Iron Works and the Columbia Hardware Co., of Cleveland. H. J. Boggis and B. F. Wade also retired from the Taylor & Boggis company as vice president and treasurer, respectively. Associated with Mr. Kahn in the purchase are Jos. C. Hostetler and Thomas L. Sidlo, law partners of Secretary of War Baker. Mr. Kahn is president, Messrs. Hostetler and Sidlo are vice president and treasurer, respectively; E. B. Emery is second vice president, and Fred Blundell is secretary of the new corporation. Mr. Blundell will likewise continue his duties as factory manager. The new owners propose to continue manufacturing a line of heavy and medium castings as well as builders' hardware.

The Taylor & Boggis plant is one of the oldest of its kind in Cleveland, having been founded n 1865. The company was incorporated in 1883 by Robert H. Boggis, C. J. Morgan, F. E. Drury and C. F. Emery, Mr. Taylor having died before the company was incorporated.

Welch Firm

Takes Over British Forgings, Ltd.—Will Establish Steel Plate Mill

Toronto, Ont., June 30.—According to an announcement made by R. Home Smith, negotiations which were being carried on between Baldwins, Ltd., Swansea, Wales, the harbor commission and the imperial munitions board, for the purchase of the plant of the British Forgings, Ltd., Ashbridges Bay, have been completed. Baldwins, Ltd., will take over the plant and site of the company and will establish a steel plate rolling mill here at a cost of upwards of $2,000,000. The British Forgings plant is one of the largest electric steel plants in the world, having a battery of ten 6-ton electric furnaces of the Heroult type.

Several of the larger Canadian carbuilders have been asked to tender bids for the construction of 20 steel mail cars and 20 first-class coaches for the Canadian National railways. The whole order is to be placed in Canadian shops and if the prices asked seem unreasonable the order will be held over until they are lower.

Contracts for the construction of new lines and extensions of existing ones in connection with the Canadian National railways system in the west have been let, aggregating approximately 340 miles, principally in Saskatchewan. It is understood that the work will be pushed forward rapidly.

The Ontario Steel Products Co., Ltd., has begun the construction of a new motor spring plant at Oshawa. The main building will be 80 x 360 feet. It will be a fireproof concrete and steel structure and will be finished by October and in operation early in 1920.

The steel trade is feeling strongly the injurious effects of the strike of metal workers which has been in progress for some weeks. Much construction work has been postponed until next year. This has caused a falling off in the demand for steel, as a number of orders involving a considerable tonnage are known to have been withheld. The most encouraging feature is the increasing demands of the motor companies, which are showing much activity in production.

The General Motors Co. of Canada, Ltd., has planned important alterations and extensions of its plant at Oshawa, Ont. A building, 80 x 400 feet, four stories, will be erected, for the assembling of Oldsmobile motors and trucks. This building will be completed in time to start production this fall. A central shipping building, 80 x 200 feet, with a capacity for 56 freight cars under roof will be constructed, so that rough weather will not interfere with loading operations. Another addition will be a four-story, 80 x 400-foot storage building with a capacity of 1000 cars. A large central enameling plant will be built and equipped with the most modern facilities. It will be a three-story structure, 80 x 300 feet. All buildings will be of steel and concrete. There will be many alterations and improvements in the present plant equipment. Good progress is being made at the large plant of two units, 160 x 600 feet, now under construction at Walkerville, Ont., where the motors, transmissions and the heavy parts of cars assembled at Oshawa will be manufactured.

The tariff bill passed the Canadian house of commons on June 19. An amendment advocating free food, free farm implements and a general downward revision of the tariff was defeated by a vote of 121 to 70.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

INCREASED business during the past four years has compelled the J. P. Devine Co., Buffalo, manufacturers of vacuum drying and evaporating apparatus as well as chemical apparatus, to build several additions to its plant, located at 1372 Clinton street. One of these additions of steel and brick construction with improved light and ventillating systems 30 x 100 feet, has just been completed and is housing the vacuum pump assembly department. Another addition, 90 x 100 feet of the same general type, now is in course of construction. It will enlarge the general assembling department. For this equipment machine tools are to be purchased. The foundations for a third addition, a new foundry, have been laid and steel construction is proceeding. This foundry, 90 x 225 feet, will be fully fitted out with new equipment which is to be purchased. It will give the company greatly increased facilities for casting large commercial units. The general contractors are Chas. Berrick & Sons Co., and the steel contractor is the Lackawanna Bridge Co., both of Buffalo.

* * *

STOCK in the Belcher Malleable Iron Co., Easton, Mass., has changed hands and the plant is to be operated under new management. The officers of the new corporation are: R. P. Rowe, president, and C. B. Swasey, treasurer.

* * *

AFTER being engaged in the iron and steel brokerage business for many years, Henry Potts & Co., 650 Real Estate Trust building, Philadelphia, have started a fully equipped scrap yard at Coatesville, Pa. It is in charge of Vice President Charles J. Scott. John R. Briggs is president.

* * *

THE National Copper & Smelting Co., Cleveland, has taken a 99-year lease on four acres facing the Nickel Plate railroad. The lease requires construction of a $20,000 building in the first two years. The company plans to improve the land with a large plant in the near future. It recently bought the Erie Buffalo Tube Co., Buffalo, and the Michigan Tube Co., Detroit. Its product is seamless brass and copper tubes.

* * *

ARRANGEMENTS have been completed by the Cincinnati Ball Crank Co., Cincinnati, with C. H. Clark, New York City, whereby it will manufacture and market the Clark compression coupling, on which patents are pending, under the name of the Cincinnati compression coupling at its plant in Cincinnati.

* * *

NEW construction for the Lakeside Forge Co., Erie, Pa., comprises a warehouse and office building and does not call for any new machine tool equipment. A new forge shop is contemplated, however, to be erected in the near future, at which time the company will require machinery of that nature.

* * *

THE American Bosch Magneto Corp., Chicopee, Mass., has closed an order for 200,000 high tension magnetos, aggregating in value $2,500,000. It is the largest order of its kind ever booked. Deliveries will start within the next 30 days. The order is equivalent to over 40 per cent of a normal turnover for a year.

* * *

THE Oil City Silica Sand Co., recently incorporated with a capital of $300,000, has completed organization with the election of the following officers: President, Dr. George C. Magee; vice president, Edward J. Quigley, secretary and treasurer H. Merrill Hughes, these men with R. G. Koch and Homer H. Schauer, to comprise the board of directors.

* * *

THE Maher Engineering Co. has been formed with offices in suite 818 Michigan Boulevard building, 30 North Michigan boulevard, Chicago. It will handle lines manufactured by the Erie Engine Works, the Sims Co., the Dayton-Dowd Co., the Wagener Steam Pump Co. and the Pratt Engineering & Machine Co.

* * *

OF steel and brick construction, a new foundry, 140 x 250 feet, was recently constructed for the Mahoning Foundry Co., Youngstown, O. It is located at Kyles corners, about 1½ miles from the company's Poland avenue plant. A 2-story warehouse also was recently erected for this company, 100 x 240 feet. All equipment has been installed. The company recently increased its capitalization from $65,000 to $150,000 to provide additional working capital.

* * *

THE contract has been let for the erection of the main and the dry kiln building for a $2,200,000 automobile body factory which the St. Louis Mfg. Corp., St. Louis, will build. The company is a subsidiary of the General Motors Corp., Detroit, and its automobile plant is expected to be completed by October. The main factory will be 600 feet long by 430 feet wide, and will cost about $400,000.

* * *

TEMPORARY offices have been opened at 729 New York block, Seattle, by the New Era Iron & Steel Corp., which was but recently organized. According to an announcement by O. B. Dagg, secretary, the company has taken over the plant of the Washington Iron & Steel Co., Sedro Woolley, Wash., which is equipped with a 60-ton open-hearth furnace. Definite information concerning the company will be announced later.

* * *

THE Ferguson Steel & Iron Co., Buffalo, launched its third seagoing tug on its navy contract for six all-steel 1000-ton tugs, Wednesday, June 25. Of the two which previously had been launched, one was completely fitted out and accepted by the department, sailing from Buffalo on June 14. Machinery on each tug consists of two Scotch marine boilers and a 1800-horsepower triple expansion reciprocating engine. The tug launched June 25 was christened KEWAYDIN by Miss May Martin as it lunged sideways into the Buffalo river. Aside from the work which the Ferguson company is doing for the United States navy department, it also is constructing a wood tug for the state of Pennsylvania and has a contract to build a steel oil barge of about 1000 tons displacement for private owners.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

CHARLES L. ALLEN, who became president and general manager of the Norton Co., Worcester, Mass., when the latter took over recently its subsidiary the Norton Grinding Co., has been treasurer and general manager of the company for some time. He succeeds Prof. George I. Alden, formerly president of both corporations, who has been made chairman of the board of directors of the combined companies. Aldus C. Higgins, who has been secretary and general counsel, has been named treasurer and general counsel, and George N. Jeppson, formerly works manager, secretary and works manager.

Mr. Allen is a native of Worcester and always has made that city his home. His business life, covering a period of about 35 years, has been entirely devoted to the interests of the Norton Co., and of its predecessors. When F. B. Norton commenced the business in a small experimental way in a pottery shop on Walter street, Worcester, in the early '70s, Mr. Allen was employed as his bookkeeper. It was not until 1880 that the business assumed any importance and its real development dates from 1885. At first conducted under the name of the F. B. Norton Co., and later as the Norton Emery Wheel Co., the Water street plant was operated until 1886, when it was removed to another location comprising a single building. From that time growth has been constant and the plant now occupies many acres. When the Norton Emery Wheel Co. was organized on June 20, 1885, Mr. Allen was made secretary; Milton P. Higgins, president; George I. Alden, treasurer, and John Jeppson, superintendent. Excepting Mr. Higgins, who died in 1912, all these officials serve as directors at the present time. In 1906, the Norton Co. and the Norton Grinding Co. were incorporated with Mr Allen in an important executive position. Since that time until last week the business of the two companies had been carried on independently, although having the same board of directors.

In addition to his Norton affiliations, Mr. Allen is a director of the Merchants' National bank and a trustee of the Worcester Five Cents Savings bank. He was the first president of the Bancroft Realty Co., owner of the Bancroft hotel. He is a member of various Worcester clubs and business organizations and of the Engineers' club, Boston. He was chairman of the fourth Liberty loan campaign committee in Worcester.

William LaCosta Neilson, Leicester, England, foreign manager, and Carl F. Dietz, general sales manager, Worcester, have been made vice presidents,

CHARLES LUCIUS ALLEN

newly-created offices of the new Norton organization. Herbert Duckworth becomes sales manager of the grinding wheel department, and Howard W. Dunbar, assistant chief engineer of the Norton Grinding Co., sales manager of the grinding machine department. Clayton O. Smith, who has been sales manager of the Norton Grinding Co., has been consulting sales engineer to Mr. Dietz. Henry Duckworth is controller. Ross C. Purdy, research engineer is to leave the exclusive employ of the company to become a private consulting engineer in Buffalo, although he is retained as consulting ceramic engineer. Lewis E. Saunders, Niagara Falls, N. Y., manager of the abrasive plants, is transferred to Worcester, and in addition to these duties he becomes research engineer.

Charles H. Norton, for many years chief engineer of the Norton Grinding Co., Worcester, Mass., has been chosen chief engineer of the grinding machine department and John C. Spence, superintendent of the Norton Grinding Co., works manager of the same department of the Norton Co., Worcester, under the reorganization plan.

Charles W. Jimnette has been made district manager of the recently established office and salesroom at 73-75 West Congress street, Detroit, for the Norton Co., Worcester, Mass.

F. W. Willett who has been treasurer for the Standard Fuel Engineering Co., Detroit, recently was promoted to be president, succeeding J. J. Beaman, who resigned.

John H. Schuler has been appointed Pittsburgh sales manager for the Camden Forge Co., Camden, N. J. His territory will include western Pennsylvania, Ohio and West Virginia.

A. E. Metiver, Paris, France, is visiting makers of machine tools and machinery in Worcester, Mass., with a view of purchasing for a private enterprise, in no way affiliated with the French government.

Arthur K. Wood recently was elected vice president and treasurer of the Westinghouse, Church, Kerr & Co. Inc., New York. He formerly was president of the Franklin Trust Co.

John Siegel, manager of the Wesseling, Germany, plant of the Norton Co., Worcester, Mass., has arrived in this country to discuss with the officials of his company the future of the plant, now in the hands of British authorities.

C. N. Talhelm now represents the Landis Tool Co., Waynesboro, Pa., and the Kearney & Trecker Co., Milwaukee, manufacturer of milling machines, on the Pacific coast. He formerly was in the New York office of the Landis company.

F. L. Hutchinson, founder of the Heating & Power Equipment Co., Milwaukee, has retired from that company to engage in the practice of mechanical engineering with offices at 1226 First National Bank building, Milwaukee. Mr. Hutchinson will specialize in central station installations and general designing and equipment of power and heating plants.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JOHN A. CAPP, who recently was elected president of the American Society for Testing Materials, first was employed in the testing laboratory of the Thomas-Houston Co., Boston. He accepted this position after he completed a course in mechanical engineering at the University of Pennsylvania in 1891. After working two years the company was combined with the Edison Electric Co., Schenectady, N. Y., to form the General Electric Co., Mr. Capp was transferred to the testing laboratory of the Schenectady works. Shortly afterwards he was placed in charge of the laboratory, and as chief of the testing department has been an important factor in its development. Since he became affiliated with the American Society for Testing Materials in 1898, Mr. Capp has been active in standardizing the specifications for copper wire and steel, and was chairman of committee A-1 on steel and B-1 on copper wire. Mr. Capp has been a member of the executive committee during the past two years.

Joseph A. Rogers has become identified with the sales force of A. C. Daft, Oliver building, Pittsburgh, dealer in ferroalloys and ores.

Fred Hooving, works manager of the Standard Seamless Tube Co., Ambridge, Pa., recently left for Sweden, where he will spend the summer.

George L. Norris, metallurgical engineer of the American Vanadium Co., Pittsburgh, for many years, has been transferred to the sales department of that company with headquarters at the New York office, 120 Broadway.

Walter W. Fowler has sold his interest in the Northwest Trading Co., Chicago, and has resigned as an officer and trustee. He is about to leave soon for the Orient and will announce his future plans upon his return.

Albert E. Dyment, who has been elected vice president and chairman of the board of directors of the Canadian General Electric Co., Ltd., Toronto, Ont., in place of the late W. D. Matthews, is a prominent figure in financial and commercial life, a director of several other companies, vice president of the Maritime Coal, Railway & Power Co., and president of the Dyment Securities Loan & Savings Co.

C. F. Michael has been elected president of the reorganized Carroll Foundry & Machine Co., Bucyrus, O. The other officers of the company are A. G. Stoltz, secretary; W. H. Picking, treasurer, and Fred C. Horn, formerly with the Ohio Foundry Co., assistant secretary-treasurer.

Howard W. Callahan, for the past two years a chemist at the Worcester Gas Light Co., Worcester, Mass., has resigned to take charge of research work in connection with combustion furnaces and thermal efficiency with the Jones & Laughlin Steel Co., Pittsburgh.

Alex Lentz, who for the past five years has been secretary and manager of sales of Brown's Copper & Brass Rolling Mills, Ltd., New Toronto, Ont., resigned on July 1. He has become associated with the Kent Ockley, Ltd., Toronto, Ont., as vice president, secretary and treasurer.

Scott Turner, E. M., has recently been appointed consulting engineer to the Mining Corp. of Canada, Ltd., 1511-20 Bank of Hamilton building, Toronto, Ont. Mr. Turner has had an extensive experience in consulting mining work, not only in the United States and Canada but in many foreign countries.

Frank R. Whitehead has become purchasing agent for the Parker Co., 165 Broadway, N. Y., exporters and importers. He formerly was purchasing agent for the United Steel & Metal Corp. The Parker Co., has branch offices in Japan and the Scandinavian countries.

H. S. Wineland, at one time connected with the Pittsburgh agency of the Missouri, Kansas and Texas railroad and later chief clerk to David W. Kuhn while the latter was fuel administrator for the Pittsburgh district, recently was appointed sales manager of the Le Moyne Steel Co., Pittsburgh.

E. W. Kratzer on Aug. 1 will become manager of the Pacific coast sales office to be established in the Monadnock building, San Francisco for the Oliver Iron & Steel Co., Pittsburgh. Mr. Kratzer for a number of years was Pacific coast sales agent for the American Iron & Steel Mfg. Co., Lebanan, Pa., now a part of the Bethlehem Steel Co. He recently resigned as assistant manager of sales of the Pacific coast office of the Bethlehem Steel Co. to join the Oliver company.

J. I. Thompson, chief engineer, and A. W. Grant Jr., gas engineer of the Koppers Co., Pittsburgh, designer and builder of by-product coke and gas oven plants, who have been investigating the by-product coke oven practice in France, Great Britain, Belgium and Sweden, expected to sail for home from Christiania, July 3.

Frank L. Estep has been made a member of the consulting engineer firm, Perin & Marshall, 2 Rector street, New York. For several years he was chief engineer of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., and later became identified with the Nova Scotia Steel & Coal Co., Sydney, N. S., in a similar capacity.

John Gillespie succeeds Arthur S. Breithaupt as general superintendent of the Philadelphia Electric Steel Corp., Conshohocken, Pa., which is controlled by the American Metallurgical Corp., Franklin Trust building, Philadelphia. Mr. Gillespie has been with the steel casting department of the Midvale Steel & Ordnance Corp. for many years.

Albert Mann recently resigned as purchasing agent of the Illinois Central railroad to become vice president in charge of purchases of the American International Steel Corp., New York City. Morris Metcalf continues as vice president in charge of the company's business. No successor yet has been named to Lieut. Col. Merrill G. Baker, who recently resigned as president of the corporation.

Jose M. Garmendia, who for the past two years has been connected with the iron, steel and machinery departments of the Federal Export Corp., sailed June 28 for Buenos Aires. He will take charge of these particular departments of the Federal Export Corp., in Argentina under the direction of the general manager, George V. Guyer. Mr. Garmendia is a member of one of the well known steel families in Spain, and obtained his early experience in the manufacture of steel in that country.

British Labor Restricts Output

Absenteeism and Tendency to Shirk in Coal and Ore Mines Curtails Iron Production—Supplies Are Short—Iron and Steel Wages Still Advancing—American Finished Products Competing Successfully in British Markets

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., June 6.

ALTHOUGH government restrictions are removed other limitations to output and to trade generally seem to be just as difficult to overcome. The report of Pease & Partners, Ltd., just issued says:

The output of the company's products has not been equal to the demand. The shortage of labor was felt in every department up to the time of demobilization; the shortage still continues at the iron works and iron-stone mines but the most serious feature is that the output per man employed at the colliers and iron-stone mines shows a heavy reduction, owing in some cases to absenteeism and in others to less work done per shift.

This shortage of supplies is one of the most ominous facts the trade has to face. In Cumberland the furnaces in blast have been considerably curtailed since the beginning of the year, and now, from the same cause, another furnace has had to be damped down at Cleator Moor in the heart of the ore field. At first it was said the shortage was due to the influenza scourge, but that explanation no longer is available and the inference is that as the coal owners do not hesitate to declare the men are not doing their best to supply ore in adequate quantities.

As in other branches of the trade, the export business is the first to suffer, no export licenses being issued until home requirements have been met. This is embarrassing to those of our foreign customers who have been accustomed to depend upon supplies from this country. It is impossible to get sufficient foundry iron, and the output of castings is being reduced accordingly, where forge iron cannot be mixed to make up for the deficiency. Forge iron is fairly plentiful. In fact, some of the Staffordshire furnaces are putting some of their iron on the bank, to be picked up later, an almost forgotten experience.

The northern ironworkers get a raise of 15 per cent on their wages as the result of the wages board ascertainment of selling prices by firms connected with the northern board for the two months ended April 30. The average selling price was £18 5s 7d ($87.14). This is attributable to the largely increased rates paid for bars. A year ago the average selling price was £14 2s ($67.68) while for January and February of this year £16 12s 10d ($79.78). Angles are 13s 3d ($3.18) more than in the last return and £4 12s 4d ($22.16) more than a year ago. The men received an increase of 12½ per cent on the last return so that the increase since the beginning of the year is 27½ per cent. The total rise in northern wages since August, 1914, is 125 per cent. The output is slightly below thaf of a year ago.

Iron Shortage is Far-reaching

The shortage of output in the iron trade is working mischief in various directions. The Cradley chain trade is nearly stagnated. There is no lack of call for chains, but the makers cannot get the requisite supplies of bars. Some of the chain shops have been restricted to one day per week. A few days ago, a large maker visited Birmingham warehouses to pick up any old lots of bars he could get. He was quite indifferent as to the charges, and was glad to get the material at any price. This state of things represents an entire change, as in the old days the Cradley chain makers often succeeded in beating down prices below the standard. A new trouble has been added to this industry, and that of nut and boltmaking, through the strike at the Earl of Dudley's pits which has stopped the supplies of coal, and shut down all the earl's great works with several others in addition. The chainmakers would be glad to use some of the American bar iron coming over; but the general impression here is that the metal will not be altogether suitable, American iron having the reputation of being rather "steely." It is hoped, however, that it will serve for nuts and bolts. There will be a scramble for the first cargo of iron coming over whenever it arrives.

Labor troubles are constant, and nearly universal. The ironmasters have made a great point of carrying out in letter and spirit the new scale adopted by the wages board to adapt wages to the 8-hour system. But this has not prevented some of the men giving notice to leave in case they fail to get satisfaction on their claim for higher wages recently presented to the board. This in itself is a flagrant violation, equally of the board's regulations, and of the honorable understanding maintained in the trade, which binds both employers and workmen to maintain production pending any wage controversy. It means, of course, that the men if they do not get what they want, mean to throw over the wages board and enforce their demands by strike—another sign of the new spirit prevailing between capital and labor—a spirit of a retrograde and utterly indefensible character.

THE IRON TRADE REVIEW cable received today states that billets are being sent over from America to this country for $63, delivered. This is evidence that British material is being undersold here. The Welsh billets sent from Wales are at the rate of £13 10s ($64.80) at works or about £14 ($67.20) delivered here. British makers heretofore have consoled themselves under the weight of American competition by the reflection that at all events it has been in the foreign markets. But this boast is now at an end since the above figure undersells the British billets as will be seen to a substantial extent. Scotch sheetmakers it is learned have placed several thousand tons of sheet bars with the United States Steel Products Co.

The fact, however, gradually is being realized that the successful competition in open markets is nothing short of a disaster to this country. The British maker of steel bedstead angles finds that he is being undersold in Bombay, hitherto almost wholly a British preserve, by no less than £7 ($33.60). Any number of similar cases are quoted by London merchants who are in despair at the loss of old customers, who find American quotations irresistible. A large structural expert in Birmingham, who has the handling of numerous structural undertakings abroad, declares that to his certain knowledge, no less than $20,000,000 worth of trade has been lost to this country in the last four months through American competition in South American, colonial, Indian and other markets.

Obituaries

IRA B. BASSETT, aged 71, retired steel merchant of Cleveland, died last week at his home in Hyannis, Mass. He was born in Hyannis and was educated in New York. At the age of 21, he located in Cleveland, and entered the employ of the jobbing firm of Butler, Wick & Co., where he remained until 1871, when he became connected with another jobbing firm, W. H. McCurdy & Co. This company became involved financially and Mr. Bassett carried on the business for the creditors for about two years. The business then was turned over to him. In 1886, with George Presley Jr., he organized the firm of Bassett & Presley. For a few years, A. R. Train was a member of the firm and during that period it was known as Bassett, Presley & Train. In 1901 the Bassett-Presley Co. was organized with Mr. Bassett as president. One year later Mr. Presley died. In June, 1911, the United States Steel Corp., through the Carnegie Steel Co., purchased the warehouse and stock of the Bassett-Presley Co., at Cleveland and took possession on July 1. Subsequently Mr. Bassett retired and re-established his residence in his native town.

C. A. Fuiden, vice president and general manager of the Continental Can Co., Chicago, died of heart disease at Minneapolis, June 17.

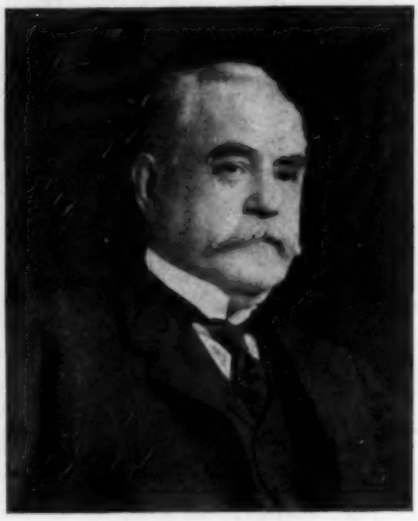
Edward A. Caswell, of Caswell & Starke, 99 John street, New York, nonferrous metal dealers, died June 25 at Westchester, Pa., aged 75.

William J. Schilling, aged 61, a retired foundryman, died recently at his home in Columbus, O. Mr. Schilling conducted a foundry in his home city for a period of 45 years.

Thomas Hill, aged 83, inventor of a patent steel dump cart, died recently at Jersey City, N. J. Mr. Hill was born in Birmingham, Eng., and removed to Jersey City 51 years ago.

J. Rossiter Valentine, president of M. D. Valentine & Bro. Co., firebrick manufacturers, Woodbridge, N. J., died suddenly of heart failure at Asbury Park, N. J., June 25. He was 74 years of age.

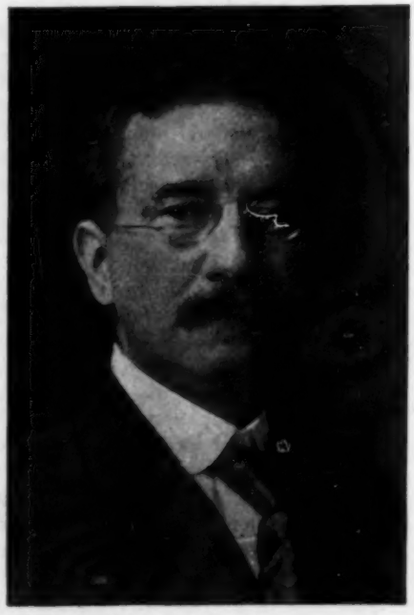
William Peat, aged 58, superintendent of masonry at the Farrel, Pa., plant of the Carnegie Steel Co.,



IRA B. BASSETT

and who laid the first brick for the initial building of that plant, died at his home in Sharon, Pa., June 24, after a lingering illness.

William A. Bole, vice president in charge of manufacturing of the Westinghouse Machine Co., East Pittsburgh, and for years a conspicuous figure in the foundry industry and in engineering circles, died at his home in Pittsburgh, June 16. He suffered a stroke of paralysis about a year ago and had been in ill health since. He was 58 years old. Following his graduation from the Allegheny high



WILLIAM A. BOLE

school, he took the examination for appointment to West Point. He passed successfully all but the physical requirements. He then entered the Western University of Pennsylvania, now the University of Pittsburgh, from which he was graduated with the degree of mechanical engineer in 1871. That year he entered the employ of the Westinghouse Machine Co. and remained with that company continuously until his death. In his capacity as vice president of the company he had charge of all of the foundry work. He was prominent in the affairs of several engineering societies, notably the Engineers' Society of Western Pennsylvania, of which he was president in 1900. He also was active in the American Society of Mechanical Engineers; in the Pittsburgh Foundrymen's association and the American Foundrymen's association, serving as vice president of the latter in 1910. He was a member of the Duquesne club of Pittsburgh and of the Engineers' club of New York.

James F. Larkin, organizer of the American Spiral Spring & Mfg. Co., Pittsburgh, died at his home in Pittsburgh, June 27, after an illness of about two years. He was born in Pittsburgh in 1857 and always made his home there. He retired from business several years ago.

Lewis A. Becker, vice president of the Bishop & Babcock Co., Cleveland, until his retirement from active business a year ago, died June 16 at his home in Chicago. He was president of the L. A. Becker Co. from 1900 to 1911, when it was consolidated with the Bishop & Babcock Co.

Thomas Hartley Given, Pittsburgh financier identified with the Crucible Steel Co. of America, the Window Glass Machine Co. and many banking and railroad interests, died at his home in Pittsburgh, June 28. He also was the owner of the *Pittsburgh Post* and the *Pittsburgh Sun*.

J. H. Bradley, president of the David Bradley Mfg. Co., Chicago and Bradley, Ill., died June 17, in Chicago. He was one of the founders and president of David Bradley & Co., when they located in Council Bluffs, Iowa, in 1882, who later were succeeded by Bradley, Merriam & Smith. He was prominent in the manufacturing, banking and social life of Chicago.

June's Tool Trading More Normal

Automotive Industries Lead All Buyers—Few Large Lists Current—Miscellaneous Inquiry Maintains Splendid Volume—Exporters Send Many Tools Overseas—Government's Tools Do Not Reach Market

MARKED for history as the month when Germany signed on the dotted line, June will be remembered in machine tool circles as the period when the market resumed some of its antebellum aspects. The improvement was not as great nor as steady as had been expected but it is believed that with the peace treaty now an accomplished fact hesitating buyers will fall into line and July will see many of the inquiries issued in June, translated into orders. While large lists, judged from a wartime standard, did not appear in number in June, a sufficient assortment of smaller inquiries were acted upon to make a considerable aggregate. The sale of new tools was somewhat hampered by the large amount of used machines which changed ownership. Delayed deliveries on many new tools militated against the invoicing of some large shipments. This latter factor also helped to influence buyers against placing their orders. Labor troubles both in the United States and in Canada, were a deterrent in many directions both among manufacturers of tools and the users of their products. Prices appear to have reached the low level and in some instances give every indication of recovering.

Automobile Trade Maintains Lead

FROM all reports, it is apparent that as has been the case for several weeks, the automobile trade in June led in the number of inquiries; in the number of orders and in the value of tools requested. In harmony with its May announcement of huge expenditures for buildings and new equipment, the General Motors Corp., Detroit, is reported to have purchased upward of $1,500,000 worth of tools from a Defiance, O., maker. The Studebaker Corp., Detroit, and South Bend, Ind., issued actual inquiries on its recently-announced 1919 requirements; it likewise made some extensive purchases. The Haynes Motor Car Co., Kokomo, Ind., bought several hundred thousand dollars worth of tools in Chicago and the Nash Motor Co., Kenosha, Wis., also took a fair number of machines. A Connecticut tool manufacturer is said to have given an option on about $500,000 worth of machinery to one automobile interest. A large list is expected from former Ford Motor Co. men, C. Harold Wills and John Lee, in the near future. They have acquired 3000 acres in Michigan for an automobile plant.

Floods of Miscellaneous Inquiries Filed

DIVERSIFIED lines of manufacturing activity again are reflected in June inquiries and orders for miscellaneous equipment. Industries generally find themselves in need of replacement and fill-in machines and during the month, a liberal flow of inquiries was received by sellers in every district. Two of the largest lists came from the Chicago Pneumatic Tool Co., Chicago, for its Franklin, Pa., plant and the Worthington Pump & Machinery Corp., for its Cudahy, Wis., plant for 40 and 35 tools, respectively. Rubber products and tire manufacturers bought heavily in Cleveland and Cincinnati. The Goodrich Tire & Rubber Co., and the Firestone Steel Products Co., Akron, O., both issued fair sized lists. The Bethlehem Shipbuilding Corp., Sparrows Point, Md., purchased on a sizable list and the Bethlehem company's new subsidiary, the Redington Standard Fittings Co., Redington, Pa., bought 12 machines. The Osgood Bradley Car Co., Worcester, Mass., bought about 50 tools. The Midvale Steel & Ordnance Co., closed considerable machinery for the Cambria plant at Johnstown, Pa. The Bucyrus Co., Milwaukee, Wis., took about $200,000 worth of tools during the month and the Columbia Graphophone Co., Bridgeport, Conn., made total purchases of about $500,000. Many steel manufacturers also purchased cranes.

Government's Tools Still Unsold

PUBLISHED first in THE IRON TRADE REVIEW, the government's plan for the inventorying and disposal of its machine tools, attracted widespread attention. This method places a value upon each tool commensurate with the length of service. No federal tools appeared among the large numbers of secondhand machines offered for sale. Bids received on advertised lists of federal-owned machines were not acted upon during June; some were returned as rejected because they were too low. One eastern bidder who bid 90 per cent of market value, stated that after filing his offer, he heard nothing and believed that the government would not sell any tools until its inventory was complete. War plant machinery continues to appear in all markets. One of the largest lists to come out in June was that of the Savage Arms Corp., from its Philadelphia and Sharon, Pa., and Utica, N. Y., plants, valued at about $1,000,000.

Railroad Buying Remains in Abeyance

WITH the passage by congress of the railroad revolving fund of $750,000,000, hope was revived among tool sellers that the long-deferred buying by railroads would commence. Requirements in many instances, have been lined up for some time, but purchases will not be made until the money is available. The Pennsylvania railroad, however, is reported to have purchased tools for its Columbus, O., and Logansport, Ind., shops as well as several cranes for Stark, O. The Baltimore & Ohio and the New York Central roads both issued specifications on some cranes. The Cumberland Valley and the Long Island railroads have out lists of 25 and 10 tools, respectively.

Exporters Absorb Considerable Machinery

SELLERS of machine tools abroad express faith in the future. They believe these markets will flourish in the near future, now that peace actually has been restored. During June many fair sized inquiries were received from overseas, particularly from France and England. It is claimed by American toolmakers' representatives abroad that the market across the ocean has been hurt by the reported sale of surplus tools by the United States government at 10 and 25 per cent below prevailing prices on new and used machines, respectively. One New York export house received an inquiry for 40 tools for France. English and French buyers took many milling machines and lathes from the Cincinnati district, which also furnished much miscellaneous equipment to Central and South America. Japan likewise has been a big buyer in both Cincinnati and Cleveland.

Machine Trade Lull Widespread

Belief Prevails However That Many Tool Requirements Will be Placed in July—Projected Buildings Numerous—Railroads to Buy Soon—General Electric and Hydraulic Pressed Steel Issue Lists

IF a lull precedes a storm, it would seem that a flood of business is due to break in the machine tool markets. Dullness prevails in practically every district, particularly in the East. In the Cleveland and Chicago territories, free buying is being done in small lots and single tool orders predominate. The aggregate of this business is considered fairly heavy. Foundation for the belief that July will be different from midsummer months of other years in point of tool buying is laid in the large number of tool inquiries current, upon which action has been deferred as well as in the many construction projects which would seem to spell extensive machine tool requirements. It is claimed that if prices could show some stability, some large buying would culminate.

As indicated at the recent railroad convention at Atlantic City, railroads were never more in need of equipment. It is thought that buying by these interests will materialize within the next two months.

Tool inquiries come from many different lines. Among those who recently issued fair sized lists are the General Electric Co., Schenectady, N. Y.; the A. B. C. Elevator Co., Jersey City, N. J.; and the naval fueling station, Constable Hook, N. J., in the East; the Hydraulic Pressed Steel Co., and the Hussey Power Parts Co., Cleveland, and the Ohio Oil Co., Findlay, O., in Cleveland.

Orders chiefly are confined to single tools and small lots. It is reported, however, that in Chicago, the Victor Mfg. & Gasket Co., that city, bought 10 punch presses. Several other purchases were made there, each comprising four tools each. The majority of sales cover one or two machines. The General Motors Corp. has been buying again in Detroit and Cleveland. The Eastern Rolling Mills Co., Baltimore, has placed its heavy equipment requirements in Pittsburgh and Avonmore, Pa., and in Chicago. The Weirton Steel Co., Weirton, W. Va., also bought some heavy equipment. Other orders are pending for this type of machinery in Pittsburgh and Cleveland. Crane orders in the East are fairly numerous, although large lists are absent.

Several announced building projects arouse expectations for large tool needs. Included is the new $1,500,000 plant at Columbus, O., for the Timken Roller Bearing Co., Canton, O.; a $2,000,000 plant at McCalle, Md., for the American Cellulose Chemical Mfg. Co., Baltimore; and three additions to the plant of the Superior Gas Engine Co., Springfield, O. Many other smaller additions and buildings have yet to announce their equipment requirements.

As announced from Washington and fully covered on another page in this issue, there is every likelihood that the Caldwell bill calling for the selling of the federally-owned tools to schools at 10 per cent of cost value to cover handling charges, will be enacted. It has the approval of the house committee.

Tools Dull; Cranes Active in Eastern Market

PROFOUND dullness characterizes the eastern machine tool market and the inactivity which has been in evidence of late is more pronounced than ever before. Inquiries are few and far between and only a few scattered machines are being placed. Included in the few inquiries current is that of the General Electric Co., Schenectady, N. Y., which is in the market for a turret lathe, grinders and some other small equipment.

Despite the prevailing inactivity, however, machine tool sellers remain optimistic. Those who visited the railroad convention at Atlantic City recently appear particularly cheerful. Prevailing opinion among those present was that considerable railroad buying would materialize within the near future or as soon as congress has finally passed on the appropriation bills now pending. The railroads generally, it appeared, were in greater need of equipment than ever before in their history. While some are still skeptical over the possibility of any early business materializing in the railroad market, owing to the incessant delay which has prevailed since the beginning of the year, the general concensus of opinion, however, appears to be that the next two months will see considerable railroad buying.

Eastern machine tool builders who have been urging the war department to dispose of its equipment by giving it to various vocational schools throughout the country have apparently lost their fight. It now is believed that these will be sold to the schools at 10 per cent of their cost value. An article from Washington covering this proposition appears elsewhere in this issue.

Included in recent contracts for machinery and equipment are those placed by the Eastern Rolling Mills Co., of Baltimore. The hot mills for this company's new plant will be erected by the National Roll & Foundry Co., Avonmore, Pa. The cold mills will be erected by the Hyde Park Foundry & Machine Co., Chicago. The furnaces will be installed by George A. Hagan & Co., Pittsburgh, and the driving gears and the pickling equipment has been awarded to the National Machine Co., also of Pittsburgh. It is stated that contracts in all run well over $700,000. Another Baltimore concern likely to be in the market in the near future is the

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American Cellulose Chemical Mfg. Co., Ltd., which is now completing plans for the erection of a $2,000,000 plant at McCalle, Md. During the past few days, equipment has been purchased for a repair shop at the naval fueling station at Constable Hook, N. J The machinery includes a shaper, a few lathes and grinders. A few heavy tools have also been bought, it is understood, by the A. B. C. Elevator Co., Jersey City.

The eastern crane market, while far from active, does not present the appearance of dullness noted in the machine tool market. No large lists are up, but there continues to be a fairly satisfactory amount of small inquiries. The Standard Oil Co. finally has issued inquiries for all electric cranes it has had under contemplation for its Bayway, N. J., plant. The list, as it now stands, calls for two 30-ton cranes, with 5-ton auxiliary, 34-foot span; two 20-ton cranes, with a 5-ton auxiliary, 48-foot span; one 10-ton crane, 2-ton auxiliary, 21-foot span; and one 10-ton crane, 2-ton auxiliary, 30-foot span. The International Petroleum Co., Ltd., a subsidiary of the Standard Oil Co., 26 Broadway, New York City, is inquiring for a special gasoline operated crane of either 2 or 3 tons capacity. Shewan & Tomes, 10 Broadway, New York City, are inquiring for two 1½-ton jib cranes for shipment to China. Another new inquiry is that of the Dilts Machine Works, Fulton, N. Y., calling for a 10-ton and a 5-ton overhead crane, both of 20-foot span. H. J. Horn & Sons, Lister avenue, Newark, N. J., are expected to close within the next few days on a 5-ton crane, with a 60-foot span. Julius Blum & Co., 510-512 West Twenty-fourth street, New York City, will require an overhead crane for a warehouse improvement. The company deals in iron and steel products. Jerome A. Jackson, recently noted as being in the market for a 20-ton electric crane for Long Island City, also is inquiring for a 10-ton electric crane with a 50-foot span, for Bridgeport, Conn. The Eastern Rolling Mill Co., Baltimore, it is learned, placed the eight overhead cranes recently referred to, with the Chesapeake Iron Works. Other recent awards include a 3-ton crane with 17-foot span for the Nichols Copper Co., Laurel Hill, L. I., this business going to Niles-Bement-Pond Co.

Many Tools Sold in Small Lots

INQUIRY and selling are in heavy aggregate volume in the machine tool trade in Chicago, represented in small lots and single tools, as has been the case for some weeks. Large lots continue practically unknown. An illustration is found in the experience of one seller when in a day's business one buyer took a miller, a boring mill, a radial drill and a shaper; another took a lathe and a miller and a third took two lathes, a miller and a shaper. It is rare where a buyer asks for or buys 10 machines of one kind. In other words, present buying is a process of sorting up and filling in rather than buying complete outfits, as was the case during the war period.

The recent informal inquiry of the Rock Island arsenal for considerable equipment has not yet been made formal, although it is understood the appropriation has been made available. This is expected to be active in a short time.

The Worthington Pump & Machinery Co. has not yet closed on its recent inquiry. The Victor Mfg. & Gasket Co., Chicago, which is about to build a new plant, is placing orders for its equipment and recently bought 10 punch presses of a type already in use in its present plant. In the experience of several dealers inquiry is increasing steadily. No changes have been made in prices, though advances are expected to be made later in the year.

Heavy Equipment Makers Wait for Closings

SOMETHING of a lull has developed in the Pittsburgh machinery and tool market. While a good many orders for tools are being placed, they are largely for individual machines and only a few lists of any considerable size are being closed. In the heavier lines, aside from an inquiry put out by a Pittsburgh district manufacturer of sheets for a crane and a few other pieces of equipment needed in connection with an enlargement of his plant, it has been a case of manufacturers sitting back and waiting for buyers to close on some of the inquiries put out some time ago and upon which they have been quoted by various builders. Manufacturers of cranes and other heavy equipment are not running their plants much better than 40 per cent of capacity at present.

Miscellaneous Demand Keen; Deliveries Poor

MANUFACTURERS who supply the Cleveland demand for machine tools and machinery are said to have taken so many orders, they now are hampered in making deliveries. Many of them report that they are having labor troubles and in several cases, this is known to have held up delivery. One dealer reports that his

Japan Fast Becoming Factor in Tool Manufacture

THAT within five or six years the Japanese factory efficiency and skill in machine tool plants will be developed to a point where products will measure up to any turned out by American manufacturers was the view expressed to Commercial Attache James F. Abbott at Tokyo recently by an American iron and steelmaker of prominence. This expert has spent some time in Japan with the intention of investing and participating in a co-operative enterprise of some sort and has made a thorough study of the manufacturing plants of that country. He believes that the future of American competition in machine tool products is not good for the reason that Japanese plants are gradually getting into a state of efficiency.

On the other hand, however, his investigations show that Japan is extraordinarily deficient in the fundamental field of foundry practice and believes that it will be some time before Japan can become independent of the United States in the way of fabricated materials out of which machines and machine tools are made. This is an interesting point, it is declared, and worthy of being considered seriously by American iron and steel men. Japanese methods in foundry work are reported as being crude and inaccurate and unskilled. Moreover, it is found that in point of castings actually produced, an American at $4.50 a day is more efficient than a Japanese at 40 cents since the former can set up 60 box castings in a day, while the latter with a helper can set up only four. This observation was made at the Kawasaki foundry. It is also stated that the Mitsubishi works at Nagasaki are by all odds the most up-to-date and efficient in Japan.

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customers are more concerned about obtaining shipment against old orders than they are about placing further requirements; he has not taken an order for about a week. Other dealers report that small orders are coming in freely, although there seems to be a widespread hesitancy to close, owing to the more or less unsettled condition regarding prices. It is thought that if these become more stationary, large buyers will close.

Purchasing agents evidence a lack of knowledge regarding delivery possibilities on machines which are not made for stock. Several oil companies who delayed making their purchases of pipe threading and pipe threading and cutting machines now are demanding quick deliveries and builders are unable to ship this side of from three to four months. This is what the Ohio Oil Co., Findlay, O., is up against on its requirements of four pipe machines of varying sizes including a 16-inch, for its Oklahoma operations. The B. F. Goodrich Co., Akron, O., wants an 18-inch pipe machine.

Practically all industrial operations are represented in the miscellaneous inquiries and orders received. Most of these cover, one, two or three machines, as has been the case for several weeks past. Larger inquiries are rare. The Hydraulic Pressed Steel Co., Cleveland, however, issued a list of 12 machines of various types last week. The Hussey Power Parts Co., 1341 Giddings road, Cleveland, is in the market for a 20-inch shaper, a No. 2 universal milling machine and a No. 2 arbor press. In addition to the list issued early last month, the Truscon Steel Co., Youngstown, O., wants a Toledo No. 168 or 168¼ or a Bliss No. 3 or 4 power press, a tumbling barrel, 30 inches in diameter and two open-end tumbling barrels. The Torbenson Axle Co., Cleveland, as well as the Firestone Steel Products Co., Akron, O., still are looking for equipment. The Ohio Millwrighting Co., 1958 West Forty-fifth street, Cleveland, is understood to be in the market. The Dow Chemical Co., Midland, Pa., wants a powerdriven roll, 8 to 10 feet, with ½-inch plate capacity. The Defiance Screw Machine Products Co., Defiance, O., desires a Barnes standard all geared 24-inch drill or tapper. J. P. Devine Co., Buffalo, manufacturer of vacuum drying, evaporating and chemical apparatus, will buy machines and tools for its general assembling department. Greenlee Bros., who operate the Jackson Augur Bit Works, Jackson, O., are to install machinery soon in a new addition. The Chelsea Screw Co., Chelsea, Mich., is purchasing automatic screw machines, drills, grinders, milling machines, etc. The Bryan Screw Machine Products Co., Bryan, O., is understood to be about ready to purchase additional machinery. The Timken-Det oit Axle Co., Canton, O., has started work upon an addition to its machine shop which will require machine tool equipment. The Cleveland Milling Machine Co., Cleveland, again has increased its capitalization to $2,000,000 and is understood to be equipping itself to manufacture automobile motors. The Lake Erie & Western railroad will establish a new machine shop at Peru, Ind.

With many large projects in the formative stage, July is expected to be different from the usual dull summer months, since large tool needs are indicated. Among the major construction items noted is a large branch plant to be erected at Columbus, O., by the Timken Roller Bearing Co., Canton, O. Buildings and machinery are to cost $1,500,000 and a list is expected soon, since the plant is to be built within the next 30 days. Three additions to the plant of the Superior Gas Engine Co., Springfield, O., which supplies the Standard Oil Co., with its engines, are expected to develop large tool requirements. The Bourne-Fuller Co., Cleveland, is erecting a warehouse and among the equipment wanted is two cranes. Equipment for the new buiilding being erected by the Home Elevator Co., Indianapolis, will cost $30,000 and includes an electric crane. The Ohio Electric & Controller Co., 588 Maurice avenue, Cleveland, is to build a 2-story addition, 80 x 100 feet, and probably will need some machinery, as will the Cuyahoga Spring Co., Cleveland, which has let a contract to the Austin Co., for a 2-story factory in which it will manufacture coiled wire springs.

The trade is much interested in the announcement out of Washington carried on another page in this issue, that in all probability the government's stocks of machine tools are not to be sold on the open market. An amended bill features the selling of this equipment to educational institutions at 10 per cent of their cost value. While Cleveland sellers have always more or less discounted the effect of placing this equipment on the open market, they had conceded that it would be a factor in the sale of both new and used machinery. The statement now is made that the passing of the bill as amended will solve a really large problem.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

CONCORD, N. H.—The Power Securities Co. has been incorporated to develop power plants of all descriptions with $27,500,000 capital by Thomas Hollis, Joseph W. Worthen and Robert C. Murchie.

BOSTON.—The Holtzer Cabot Electric Co. is having plans made for a storehouse.

BOSTON.—The Leary Automatic Muffler Co. recently was incorporated with $90,000 capital, by D. Francis Leary, Francis M. Doyle and George F. McKelleget.

BOSTON.—The Alexander-Porter Co. recently was incorporated to make automobile supplies with $25,000 capital, by William L. Alexander, C. Harold Porter, Quincy, Mass., and A. E. Yont.

BOSTON.—The Hadley-Hayden Co. has been incorporated to make mechanical and electrical appliances with $25,000 capital, by Ralph E. Hadley, Fred L. Hayden, South Braintree, Mass., and B. P. Hadley.

NEW BEDFORD, MASS.—John I. Paulding, Inc., has been incorporated to make electrical fixtures, appliances, etc., with $75,000 capital, by Gustav A. Johnson, John I. Paulding and A. A. Johnson.

NORTH CAMBRIDGE, MASS.—The Beckwith Box Toe Co., 33 Clarendon avenue, has had plans drawn for a machine shop and storage building, 2-stories, 32 x 92 feet, estimated to cost $20,000.

WATERTOWN, MASS.—The war department has let the contract to the E. D. Ward Co., Worcester, Mass., for alterations and additions to the machine, smith, press and hardening shops and a concrete foundation for a 78 x 500-foot storehouse for ma-

SIGNING PEACE PAPERS FOR R. M. J.

Say Fellows:

You had better sign those orders for the Hubbard Rolls or you wont be able to get them.

You know what happened to the Huns by not signing early.

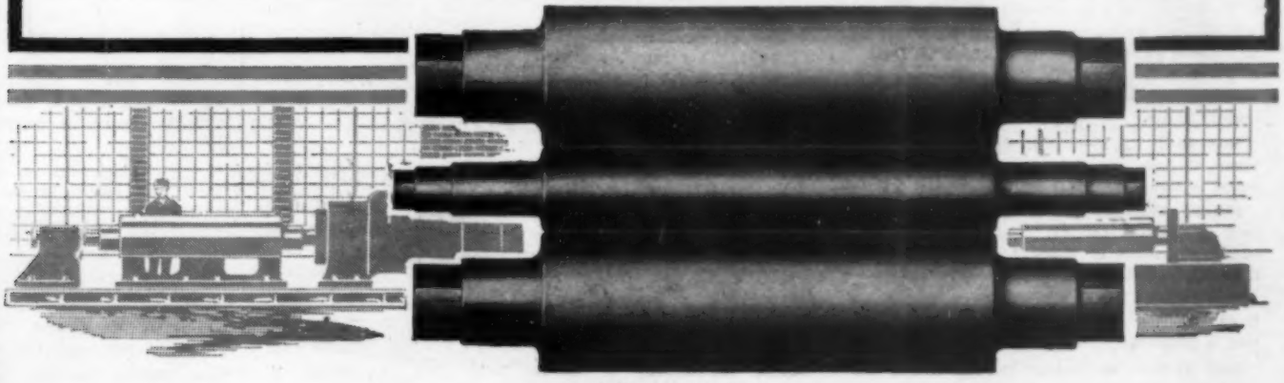
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.



Say you saw it in THE IRON TRADE REVIEW

chinery at the United States arsenal, to cost $150,000.

WEBSTER, MASS.—William C. Klebart and George H. Rowley, metal workers, plan to erect a 2-story, 45 x 90-foot plant, which will be a branch of their Putnam, Conn., business.

WORCESTER, MASS.—The M. B. Hill Co. has been incorporated to make machine tools with $5000 capital, by Milton B. Hill, William Arter and Harold Tattersall.

CRANSTON, R. I.—The General Fire Extinguisher Co. has let a contract for a pipe shop, 3-stories, 70 x 120 feet, estimated to cost $70,000.

PROVIDENCE, R. I.—The Atlantic Mills has let a contract for a power house, 3-stories, 46 x 98 feet, estimated to cost $25,000.

PROVIDENCE, R. I.—The Iodine Antiseptic Pen Co., Inc., has been incorporated to make pens with $50,000 capital, by Montafix W. Houghton, John F. Giles and Henry Hood.

BRIDGEPORT, CONN.—The Schwardtle Stamp Co. has let a contract for a plant, 3-stories, 40 x 100 feet, to cost about $25,000.

BRIDGEPORT, CONN.—The Presteel Mfg. Co., 183 John street, recently incorporated, has perfected its organization and will engage in the manufacture of steel specialties. Alexander Berg is president.

HARTOFRD, CONN.—The Fuller Brush Co., maker of wire brushes, etc., will build a 4-story factory to cost $150,000.

GROTON, CONN.—Plans will be ready to figure July 5 for a 3-story, 60 x 170-foot mill to cost $90,000 for the Max Pollock Co., which is in the market for motors, shafting hangers and elevators.

MILFORD, CONN.—The Lake Engineering Co. has been incorporated with $5000 capital by Cecil P. Ford, Thomas E. Lake and R. Melvil Keys, Bridgeport, Conn.

NEW BRITAIN, CONN.—The Cooley Co., Inc., iron and steel, recently was incorporated with $1,000,000 capital, by H. S. Hart, N. P. Cooley, E. N. Stanley and others.

NEW HAVEN, CONN.—The Standard Iron Works Co. recently was incorporated with $10,000 capital, by S. D. Pardoll, Louis Sachs and others.

North Atlantic States

ALBANY, N. Y.—The William G. Sheehan Construction Co. has the contract to erect a plant for the Thacher Foundry & Propeller Corp.

BROOKLYN, N. Y.—The Metal Package Co. is ready for bids for a plant addition, 5-stories.

BROOKLYN, N. Y.—The Edison Electric Illuminating Co., 360 Pearl street, has awarded a contract for a plant addition.

BROOKLYN, N. Y.—The York Sheet Metal Works, Inc., has been incorporated with $5000 capital, by I. Litner, H. Blecher and S. Wacht Jr., 170 Broadway.

BROOKLYN, N. Y.—Ground has been broken for the erection of the first unit of the proposed plant of the E. W. Bliss Co. The plant will be in four units and when completed will be 200 x 1200 feet.

BROOKLYN, N. Y.—Oscar M. Carter, Inc., tools, hardware and agricultural implements, recently was incorporated with $50,000 capital, by A. P. Sass, 140 West Fifty-seventh street, R. C. Perlman, 949 Fox street, and M. Berger, 600 Beach street.

BUFFALO. — Large additions to its plant are planned by the J. P. Devine Co. Foundations for a new foundry, 90 x 225 feet, are being put in.

BUFFALO.—The Auto Device Mfg. Co. recently was incorporated with $100,000 capital, by W. Miller, G. A. Loohn and P. S. Wheaton, Kenmore, N. Y.

BUFFALO.—The Auto Motive Tractor Corp. of America has been incorporated with $4,000,000 capital, by J. O. Moore, H. L. Jaurh and F. J. Maloney.

BUFFALO.—The M. & M. Tractor Co. has been incorporated with $300,000 capital to manufacture tractors, etc., by C. M. Baldy, Marine Bank building, T. R. Wheeler and J. L. Kenefick.

BUFFALO.—The Smith Metal Arts Co. has been incorporated with $100,000 capital, by F. C. Smith, C. F. Damm and A. H. Jamieson. The company is establishing a plant at Niagara street and Massachusetts avenue.

MONTAUK, N. Y.—C. W. Parks, chief of the bureau of yards and docks, navy department, Washington, is taking bids for a power house.

MOUNT VERNON, N. Y.—The Charleston Dry Dock & Machine Co. has been incorporated with $2,225,000 capital, by Harold J. Gallagher, Winthrop H. Kellogg and Robert M. Reid.

NEW YORK.—The John Trageser Steam Boiler Works will erect a small addition. J. O. Whittenback is architect.

NEW YORK.—The Tungsten Tool Co. recently was incorporated with $50,000 capital, by G. Posner, A. and J. Simons, 2139 Daly avenue.

NEW YORK.—The Empire Metal Aircraft Corp. has been incorporated with $50,000 capital, by J. H. Claffy, W. M. G. Watson and H. A. St. George, 41 Park Row.

NEW YORK.—The David E. Allen Yonkers Foundry has been incorporated with $25,000 capital, by H. Whitehead, W. S. Pronk and E. E. Allen, Yonkers, N. Y.

NEW YORK.—The Universal Metal Parts Mfg. Co. has been incorporated with $10,000 capital, by J. Mumaw, G. Meyer and S. A. Lichtenstein, 608 West 188th street.

NEW YORK.—The Un-X-Ld Products Corp., signal devices, recently was incorporated with $10,000 capital, by N. Fishman, A. J. Concotta and R. M. Schmer, 51 Chambers street.

NEW YORK.—The Finkel Umbrella Frame Co., B. Finkel, president, 2534 East 177th street, has had plans drawn for a plant, 1-story, 100 x 200 feet, estimated to cost $75,000.

NEW YORK.—The Martaler Mfg. Co. recently was incorporated with $10,000 capital to engage in the manufacture of electrical devices, by A. Ascher, M. Fogel and A. Kutz, 320 Broadway.

NEW YORK.—The American & British Mfg. Co., automobiles, airplanes, etc., recently was incorporated with $3,260,000 active capital, by W. J. Cullen, D. T. Connett and C. M. McKeever, 120 Broadway.

NEW YORK.—The Riverside Package Machinery Co., foundry and factory supplies, has been incorporated with $50,000 capital, by J. D. Reifsnyder, M. Galibert and E. Hirschberg, 434 East 157th street.

NEW YORK.—The Morse Magneto Clock Co. has been incorporated to manufacture clocks, etc., with $25,000 capital, by A. G. Morse, 233 Broadway, J. S. Morse, 222 Riverside drive, and E. F. Howard, 163 Lefferts place, Brooklyn, N. Y.

NEW YORK.—The Morrow Sales Corp. has been incorporated to manufacture machinery and supplies with $25,000 capital, by R. H. Clarke, 53 West Eighty-fifth street, I. F. Browne, 209 West 102nd street, and M. E. Barnaby, 20 Stephens court, Brooklyn, N. Y.

NIAGARA FALLS, N. Y.—The Carborundum Co. has let a contract for a tank storage building, 3-stories, 37 x 85 feet.

NORTH TONAWANDA, N. Y.—The Buffalo Bolt Co. will build an addition, 81 x 171 feet.

OSSINING, N. Y.—Hughes-Saunders Motors has been incorporated with $50,000 capital, by C. J. Hughes, E. L. Ryder and W. Saunders.

OSWEGO, N. Y.—The Hinkley Towing Co. has arranged to build a ship repair works to cost $40,000.

ROCHESTER, N. Y.—The Rochester Auto & Tool Co. recently was incorporated with $25,000 capital, by C. Wassill, K. Wojdakowics and F. Rzepect.

SYRACUSE, N. Y.—The Syracuse Auto Supply Corp. recently was incorporated with $60,000 capital, by H. W. Smith, L. W. Bennett and C. H. Sanford, to manufacture automobile specialties.

Syracuse, N. Y.—The King Shipping Case Corp. is being organized with $750,000 capital, to manufacture steel shipping cases. Those interested are F. C. King, A. N. Ellis, Levie S. Chapman and W. H. Foxhall.

ELLWOOD CITY, PA.—The Ellwood Nail Co. will build an addition 185 feet long.

FRANKLIN, PA.—The Chicago Pneumatic Tool Co. has arranged to build a plant here.

HOMESTEAD, PA.—The Homestead Valve Mfg. Co. plans to build a room for its melting furnaces.

LEECHBURG, PA.—The American Natural Gas Co. will build a plant here.

LEECHBURG, PA.—The Hutchinson Car & Roofing Co. has let the contract for a plant here.

McKEESPORT, PA.—Herman Telley, of this city, will fit up a plant to manufacture gas for welding purposes.

PHILADELPHIA.—The Niles-Bement-Pond Co. is taking bids for a boiler house, 1-story, 44 x 60 feet.

PHILADELPHIA.—A contract for the erection of a $262,000 pattern shop at League island has been awarded to M. H. C. McCloskey Jr., by the navy department.

PHILADELPHIA. — The Weston Automatic Steam Machinery Co. recently was incorporated with $100,000 capital, by Carroll C. Weston, Walter R. Moore and Edward E. Brent.

PHILADELPHIA.—The Philadelphia Textile Machine Co. recently obtained a permit to erect a plant addition, 1-story, 75 x 240 feet, estimated to cost $51,000. The contract has been let to the Hennebique Construction Co., 1170 Broadway, New York.

SOUTH ALLENTOWN, PA.—The International Motor Co. is taking bids on separate contracts for a factory and assembling building, 1-story, 300 x 600 feet, estimated to cost $150,000.

BUTLER, N. J.—The Apollo Magneto Co. and the Magneto Winding Co., Brooklyn, N. Y., with Isaac Q. Gurnee, Charles G. Wilson and William L. McCue, will build a plant for the manufacture of magnetos.

CAMDEN, N. J.—The Camden Auto Radiator Co. has awarded a contract to Potts Bros. & Cooperson for a small addition.

CAMDEN, N. J.—The Norton Mfg. Co., 28 South Thirty-second street, has been incorporated to manufacture novelties, hardware, etc., with $25,000 capital.

EAST ORANGE, N. J.—The Synthetic Coal & By-Products Corp. has been incorporated with $1,000,000 capital to manufacture a substitute for coal, by J. B. Day, B. J. Cummings and Charles Herzog.

JERSEY CITY, N. J.—The Diamond Flake Graphite Co., 15 Exchange place, recently was incorporated with $200,000 capital.

JERSEY CITY, N. J.—The Poertner Motor Car Co., Inc., of New Jersey, 15 Exchange place, recently was incorporated with $25,000 capital, to manufacture automobiles, airplanes, etc.

JERSEY CITY, N. J.—The D. D. Mills Co. has been incorporated with $18,000 capital to manufacture and deal in castings, by Agustine Davis, William G. McCune and William Lesby, Plainfield, N. J.

NEWARK, N. J.—The Natural Carbonic Gas Co. will build additions estimated to cost $16,000.

NEWARK, N. J. — The A. W. Wheaton Brass Works will build a 2-story office and storage building.

NEWARK, N. J.—The American Aluminum Ware

FARRELL-CHEEK STEEL CASTINGS

Farrell-Cheek Steel Castings are preferred by some of the world's largest machine tool builders because of their uniformly high quality, freedom from scabs, shrinks and hot cracks.

Illustration shows a typical view in the plant of the Cincinnati Milling Machine Co., Cincinnati, Ohio, whom we are proud to serve, and one of their famous machines.

You can save machining time and improve your product with Farrell-Cheek Steel Castings.

Write us about your problem.

FARRELL-CHEEK STEEL FOUNDRY CO.
Sandusky, Ohio

Say you saw it in THE IRON TRADE REVIEW

Co. has a permit for the erection of a 3-story addition.

NEWARK, N. J.—The Organic Salt & Acid Co., Passaic river and Avenue R, will erect a 1-story gas producing plant, 36 x 48 feet.

NEWARK, N. J.—The Standard Mfg. Co. has been incorporated with $50,000 capital to manufacture hardware, etc., by H. A. Black, W. J. Hilton and A. F. McCabe.

NEWARK, N. J.—The Craig-Bullion Mfg. Co., 15 Clinton street, has been incorporated with $100,000 capital to manufacture snips, flexible files, scissors, etc.

NEWARK, N. J.—The American Utilities Contracting Co., 671 Broad street, recently was incorporated with $125,000 capital, to operate sewerage systems, disposal plants, etc.

NEWARK, N. J.—Although the Central Stamping Co. has just acquired a 150 x 200-foot plot adjoining its plant, it is understood that no improvements will be undertaken at the present time.

TRENTON, N. J.—John E. Thropp & Sons Co. has let a contract for a machine shop addition, 1-story, estimated to cost $50,000.

BALTIMORE.—The City Spring Works contemplates a plant, 2-stories, 100 x 150 feet, estimated to cost $40,000.

BALTIMORE.—George R. Guild, 3418 Guilford terrace, plans to engage in the manufacture of railway block signals and devices.

BALTIMORE.—The American Cellulose Chemical Mfg. Co., Ltd., is having plans prepared for a $2,000,000 plant at McCalle, Md.

BALTIMORE.—The Canlon Air Brake Co., 563 Calvert building, will erect a machine shop, 60 x 200 feet, and also plans to erect a foundry and pattern shop.

BALTIMORE.—Plans have been completed for the rolling mill, which J. J. Jones and associates have been planning to build here. A company will be incorporated to be known as the Eastern Rolling Mill Co. and will be capitalized at $6,000,000. Steel sheets for automobile goods, etc., will be manufactured. Mr. Jones formery was general manager of the Massillon Rolling Mill Co., Massillon, O.

BRUNSWICK, MD.—F. L. Spencer, city clerk, will take bids shortly for a 5,000,000-gallon reservoir.

HAGERSTOWN, MD.—The Hagerstown Welding & Automobile Works, Virginia avenue, has been organized and will erect a 1-story, 40 x 100-foot, and a 2-story, 40 x 50-foot, buildings.

LYNCHBURG, VA.—The Reeves Coal & Dock Co. recently was incorporated with $500,000 capital, by O. W. Gardner, V. P. Clinton DeWitt and others.

RICHMOND, VA.—The plant of the Victoria Metal Co. recently was damaged by fire.

Central States Activity

BLACK RIVER FALLS, WIS.—This city is reported planning improvements costing $25,000 to the municipal light and power plant. It is expected plans will be ready for bids about July 10.

BELOIT, WIS.—Bids for a junior high and vocational training school will be taken in July by the board of education.

CLINTONVILLE, WIS.—The Topp-Stewart Tractor Co. is contemplating two additions for heat treating and general forging.

FOND DU LAC, WIS.—The National Drop Head Projector Co. expects to begin operation in its new plant shortly. It now is installing machinery and equipment.

KENOSHA, WIS.—The Nash Motors Co. has let a contract for a manufacturing building, 100 x 200 feet, estimated to cost $30,000. Charles W. Nash is president.

KENOSHA, WIS.—The Simmons Co., manufacturer of steel and brass beds, has awarded a contract to the Kenwood Bridge & Iron Co., Chicago, for a 6-story plant addition, 90 x 320 feet.

MENASHA, WIS.—The Menasha Boiler Works is having plans drawn for a plant.

MILWAUKEE.—Th Universal Iron & Wire Works has broken ground for a new plant to cost about $15,000.

MILWAUKEE.—The Briggs & Stratton Co. has taken over the motor wheel department of the A. O. Smith Corp. The plant will be enlarged.

MILWAUKEE.—The American Metal Parts Mfg. Co. has been incorporated with $150,000 capital, by Edgar Harum, Leon Smith and Arthur White.

MILWAUKEE.—The Standard Steel Corp., manufacturer of farm equipment, located at 491 Virginia street, is reported planning a new plant estimated to cost $75,000.

MILWAUKEE.—The W. L. Romaine Machinery Co. has been organized by W. L. Romaine, formerly of the Badger-Packard Machinery Co. The new company is capitalized at $50,000.

MILWAUKEE.—An additional 20,000,000-gallon pumping unit will be installed at the North Point pumping station of the municipal waterworks. Bids are being received until July 16, by the board of public works.

MILWAUKEE.—Articles of incorporation have been filed by the Galvanizing & Sales Co., with $12,500 capital. The company will engage in hot process galvanizing, tinning, etc. The incorporators are Royden E. Webster, 389 Thirty-fourth street, Albert B. Houghton and Neele B. Neelen, attorneys.

OCONOMOWOC, WIS.—The board of education plans a high school building, with vocational training departments, estimated to cost $150,000.

PORTAGE, WIS.—The Loomis-Weinke Motor Co. is having plans drawn for a 1-story building, 90 x 120 feet, estimated to cost $20,000.

PORTAGE, WIS.—Slinger & Sons, founders and machinists, are building an addition costing $20,000 for machine and automobile repair work.

SHEBOYGAN, WIS.—The F. Blocki Co., manufacturer of agricultural implements, etc., has purchased a site for a new plant, estimated to cost $45,000.

WAUKESHA, WIS.—The Waukesha Automobile & Machine Co. has been organized by H. M. Mauer and will build a machine shop, 50 x 120 feet, estimated to cost $20,000.

WEST ALLIS, WIS.—A new gray iron foundry, which will specialize in gas engine castings, will be established here by the Motor Castings Co. now being organized. Frank E. Gray, architect, 86 Michigan street, Milwaukee, is drawing plans for a foundry, 114 x 182 feet.

ADRIAN, MICH.—The Schwartze Electric Co. will take bids soon on a plant addition, 1-story, 100 x 100 feet, estimated to cost $20,000.

DETROIT.—The Grand Rapids Blow Pipe Co. will start work soon on a plant addition.

DETROIT.—The Hudson Motor Car Co. has had plans drawn for a plant, 1-story, 340 x 400 feet, estimated to cost $225,000.

DETROIT.—Part of the plant of the Commerce Motor Car Co. recently was damaged by fire. The loss has been estimated at $100,000.

DETROIT.—The Brown Hutchinson Iron Works, W. H. Steger, president, 531 Clay avenue, will start work soon on a plant, 1-story, 110 x 156 feet, estimated to cost $19,500.

LANSING, MICH.—The Novo Engine Co. has let contracts for a foundry, 100 x 160 feet and a machine shop, 1-story, 90 x 260 feet. The company is also building a new bank of five core ovens and is installing new equipment in the machine shop to the extent of $40,000.

MUSKEGON, MICH.—The Muskegon Scrap Material Co. has been organized to take over the business of the Marcus Iron & Steel Co. and that of H. Rubinsky.

OWOSSO, MICH.—Construction of a foundry, 40 x 100 feet and a machine shop of the same dimensions, will be started shortly by contractors for the Owosso Bronze Bearings Co., which was organized several months ago.

CHICAGO.—C. H. Fisk, 1581 Ogden avenue, has let a contract for a machine shop addition.

CHICAGO.—The B. Mercil & Sons Plating Co., 1911 Fulton street, has awarded contracts for a 1-story addition, 32 x 99 feet.

CHICAGO.—Albert Pick & Co., 212 West Randolph street, contemplates a plant addition, 5-stories, 112 x 256 feet, estimated to cost $400,000.

CHICAGO.—The Elliot-Stephens Machinery Co. has been organized by H. C. Elliot, formerly vice president of the Marshall & Huschart Machinery Co.

CHICAGO.—The Charles F. Elms Engineering Works will take bids soon for a plant additon, 1-story, 50 x 100 feet, esitmated to cost $12,000.

CHICAGO.—Geraghty & Co., 3035 West Lake street, manufacturer of metal novelties, has had plans prepared for an addition estimated to cost $25,000.

CHICAGO.—The Pacific Flush Tank Co., 4241 Ravenswood avenue, has let a contract for a plant addition, 1-story, 35 x 125 feet, estimated to cost $20,000.

CHICAGO.—The Armstrong Bros. Tool Co., J. Armstrong, president, 339 North Francisco avenue, is taking bids for a plant addition estimated to cost $65,000.

CHICAGO.—The Chicago Roller Skate Co., care of Ware Bros., 224 North Ada street, contemplates a machine shop, 1-story, 100 x 400 feet, estimated to cost $75,000.

CHICAGO.—The Ilg Electric Ventilating Co., 154 Whiting street, is having preliminary plans prepared for a plant, 4-stories, estimated to cost $750,000. S. W. Weiss is president.

CHICAGO.—The Chicago Baling Press Co., 305 E. LaSalle street, capitalized at $35,000, has been chartered to manufacture presses by Frederick G. Manual, Maxwell C. Tobias and Charles R. Holton.

DES PLAINES, ILL.—The Benjamin Electric Co., R. B. Benjamin, president, 120 South Sangamen avenue, is taking bids for a plant, 3-stories, 60 x 280 feet, estimated to cost $200,000.

EAST FREEPORT, ILL.—The Stover Mfg. & Engine Co. is erecting a plant, 1-story, 48 x 75 feet.

MOLINE, ILL.—The Victor Storage Battery Co. contemplates the erection of a 1-story, 80 x 300-foot building, to be used for manufacturing purposes. B. F. White is secretary of the company.

PETERSBURG, ILL.—The Carroll Motors Corp. has been incorporated with $20,000 capital, to engage in the manufacture of valve-in-head tractor engines.

PONTIAC, ILL.—The Meadows Mfg. Co., manufacturer of washing machines, etc., plans an addition.

QUINCY, ILL.—A new foundry company has been organized here to replace the Quincy Casting Co. which has moved to Cedar Rapids, Iowa. Those interested are Frank J. O'Brien, C. G. McDaniel, A. W. Humphrey and John Barton.

ROCK ISLAND, ILL.—The B. & D. Mfg. Co. has been granted a charter to manufacture metal tools, dies, etc., with $15,000 capital. D. H. Donaldson is president.

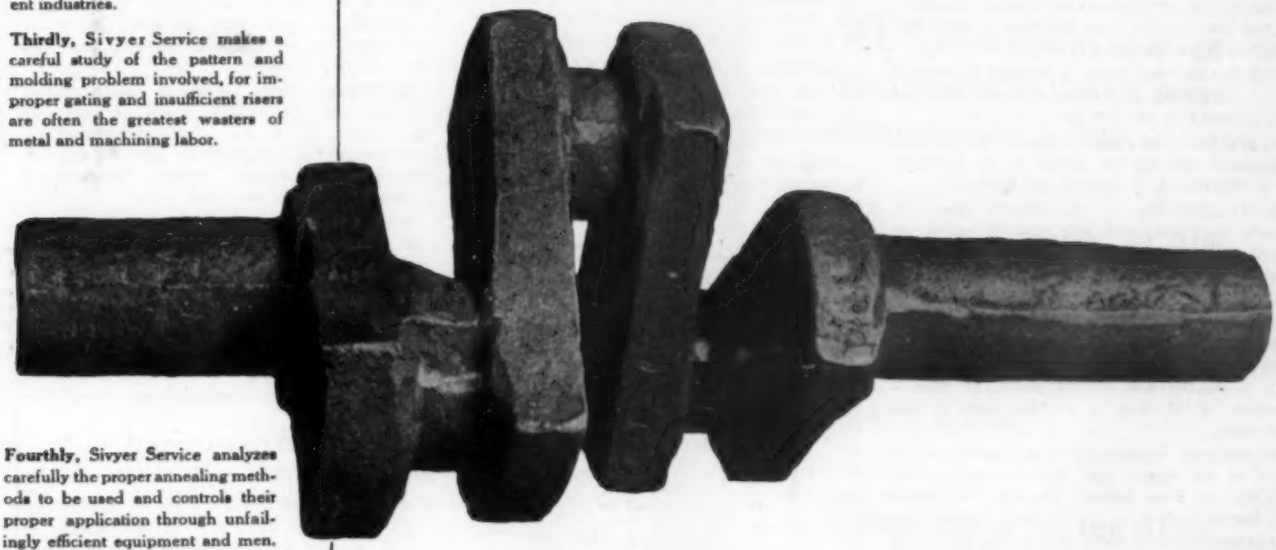
WAUKEGAN, ILL.—The Chicago Hardware Foundry Co., North Chicago, Ill., will increase its capital

The Sivyer Service of providing Electric Steel castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency in the completed unit.

Secondly, Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly, Sivyer Service makes a careful study of the pattern and molding problem involved, for improper gating and insufficient risers are often the greatest wasters of metal and machining labor.

SIVYER (S) CASTINGS



Fourthly, Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little on the natural freedom of electric steel from occluded gases nor even on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

CAST crank shafts for coal handling machinery caused the Roberts & Schaefer Co. much trouble until they came to us with a request to determine the steel proper for these castings. After careful analysis we recommended Sivyer Vanadium Electric Furnace Steel with a special carbon content, providing stiffness enough for the arduous work without loss of the necessary toughness and strength. This careful specification of the proper metal is one of the many factors in Sivyer Service that has set free the demand for Sivyer Castings from the usual local limits and made it nation-wide.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

from $400,000 to $500,000 and will build a foundry and warehouse, estimated to cost $100,000.

WOODSTOCK, ILL.—The Woodstock Typewriter Co. will build an addition, 36 x 64 feet, to be used for polishing, drilling and milling departments.

BELLVILLE, O.—The Bellville Foundry & Machine Co. recently was incorporated with $100,000 capital, by James P. Wood, Thomas H. Jones, Grover Higgins, Harold G. Mosier and W. B. Cockley.

CANTON, O.—The plant of the Henry Miller Foundry Co. recently was damaged by fire.

CANTON, O.—The Arctic Ice Machine Co., H. D. Powell, manager, is taking bids for a machine shop addition, 1-story, 100 x 250 feet, estimated to cost $75,000.

CINCINNATI.—Contracts are being let for a plant, 200 x 450 feet, for the Trailmobile Co., Oakley, O.

CINCINNATI.—The Volyum Pump Co. has been incorporated with $15,000 capital, by John A. Smith and others.

CLEVELAND.—The Scientific Heater Co. has leased the viaduct power block.

CLEVELAND.—E. Lemberg has a permit to erect a machine shop, 1-story, 60 x 120 feet, at 2934 East Fifty-fifth street, to cost $12,000.

CLEVELAND.—The Parish & Bingham Co. recently let a contract for an addition, 2-stories, 30 x 88 feet, estimated to cost $15,000.

CLEVELAND.—The Motor Patterns Co. has been incorporated with $50,000 capital, by H. R. Street, F. B. Whitlock, J. S. Polechek and others.

CLEVELAND.—The J. C. Cromwell Steel Co. recently was incorporated with $10,000 capital, by Harold T. Clark, Leader-News building, and others.

CLEVELAND.—The Austin Co. has the contract for a 1-story steel structure, 136 x 330 feet, for the Bourne-Fuller Co. The building will house two cranes.

CLEVELAND.—The Standard Metal Goods Co. has been incorporated with $10,000 capital, by Harry T. Hamilton, W. W. Hoyt, A. L. Lang, Harry H. Rose and others.

CLEVELAND.—Construction of an addition to the plant of the Grabler Mfg. Co., estimated to cost $75,000, has been started. The Sam W. Emerson Co. has the contract.

CLEVELAND.—The Foster Bolt & Nut Co., A. M. Foster, vice president, East Seventy-second street and Union avenue, has let a contract for a plant, 2-stories, 77 x 123 feet, estimated to cost $30,000.

CLEVELAND.—The Erie Mfg. Co., wood, metal and allied products, has been incorporated with $25,000 capital, by E. L. Cannon, F. H. Parker, H. Heiser, E. M. Morgan, C. W. Kelsey and others.

CLEVELAND.—The General Electric Co., Nela Park, has awarded a contract to the Sam W. Emerson Co. for a 4-story building, 112 x 300 feet, which will be devoted to the manufacture of lamps.

CLEVELAND. — Contractors have started on a foundry, 96 x 160 feet for the Nickel Plate Foundry Co., East 152nd street. Practically all necessary equipment has been purchased, according to C. M. Bolich.

CLEVELAND.—The Cuyahoga Spring Co., Berea road, has awarded a contract to the Austin Co., Cleveland, for a plant, 2-stories, 80 x 146 feet. The building will be used for the manufacture of coiled wire springs.

CLEVELAND.—The Acme-Palmers & DeMooy Foundry Co. has been incorporated with $400,000 capital, by Alonzo M. Snyder, Williamson building, W. H. Seagraves, Robert E. Roehm, M. H. Gallagher and N. I. Young.

DAYTON, O.—The Schwartz Electric Co. has been incorporated with $15,000 capital, by C. H. Schwartz, George F. Schneidler, R. H. Davis and others.

EAST LIBERTY, O.—The People's Light & Power Co. has been incorporated with $20,000 capital, by L. E. Traul, J. E. Dunaway, O. L. Slenker and others.

IRONTON, O.—The Marting Iron & Steel Co., according to a report, has under consideration the erection of a dust recovery plant. It has been estimated it would be built at a cost of $75,000.

JACKSON, O.—Greenlee Bros., operators of the Jackson Auger Bit Works, are reported planning to build an addition and install additional machinery.

MIDDLETOWN, O.—George Hills, formerly of the Ohio General Tractor Co., is reported to be organizing a $300,000 corporation to engage in the manufacture of tractors.

NEWARK, O.—The May Fieberger Furnace Co. recently was incorporated with $50,000 capital by F. W. Moser and others.

NILES, O.—The Falcon Steel Co., recently incorporated, has opened offices here, and bids are now being taken for a plant.

PORTSMOUTH, O.—The Reliable Tractor & Engine Co. recently was incorporated with $2,000,000 capital, by C. Heer and F. E. Adams.

TOLEDO, O.—The A. M. Mayle Mfg. Co., tools and machinery, has been incorporated with $20,000 capital, by Albert M. Mayle, John M. Vollmayer, Stuart S. Wall and others.

WELLINGTON, O.—The Sterling Machine & Stamping Co. has let a contract for an aluminum foundry, estimated to cost $35,000.

Business in Canada

MONTREAL, QUE.—The Robert Redford Co., Ltd., has been incorporated to build and repair ships, etc., with $1,000,000 capital, by Aubrey H. Elder, Felix W. Hackett, D. Burley-Smith and others.

MONTREAL, QUE.—The Satimo Co., of Canada, Ltd., has been incorporated to manufacture cutlery, etc., with $100,000 capital, by Errol Languedoc, Colville Sinclair, Ralph E. Alland and others.

HAMILTON, ONT.—The Quaker City Chemical Co., Philadelphia, has awarded the general contract to Mackay Bros., 66 St. Clair avenue, for the erection of a $30,000 plant.

KINGSTON, ONT.—This city contemplates the purchase of an electric pump, gas purifiers and other equipment.

OSHAWA, ONT.—A. F. Byers & Co., 340 University avenue, Montreal, has the general contract for a manufacturing plant here for the Gananoque Spring & Axle Co.

BRANTFORD, ONT.—Plans are being prepared for an addition to the Brantford Computing Scale Co., Ltd., 14 Grey street.

BRANTFORD, ONT.—The Ker & Goodwin Machinery Co., Ltd., has been incorporated to take over the business of the Ker & Goodwin Machine Co. The company is capitalized at $500,000 and was incorporated by Abraham Goodwin, Willoughby S. Brewster, George D. Hoyd and others.

GALT, ONT.—The plant of R. McDougall Co., Ltd., recently was damaged by fire. The pattern storehouse and the molding shop were the most damaged.

VANCOUVER, B. C.—The B. C. Equipment Co. has purchased a lot adjacent to its plant and will extend its traveling crane another 75 feet.

Business Changes Recently Announced

THE Pittsburgh office and store of the Niles-Bement-Pond Co., 111 Broadway, New York, machine tool manufacturer, has been removed from the Frick building to 425 Seventh avenue. A stock of the Pratt & Whitney Co.'s small tools will be maintained.

* * *

Edgar M. Moore & Co. has recently taken over the Pittsburgh sales agency for the Watson Wagon Co., Canastota, N. Y., manufacturer of industrial trailers.

* * *

The general office of the American Railway Equipment Co. now is located in the Liberty building, Philadelphia, with President G. W. Mingus in charge.

* * *

The Pittsburgh office of the National Trading Co. now is located in room 516 Oliver building. H. O. Price is general sales manager of the company.

* * *

The Nathan Mfg. Co., New York, has opened new offices in room 707 Great Northern building, Chicago.

* * *

The Mexican government has opened a commercial office at 112 West Adams street, Chicago, to care for interests in the middle western states, in charge of Senor Sealtiel L. Alatriste. It is designed to bring closer business relations between the countries and furnish information of commercial openings of interest to Americans.

* * *

The Massey Concrete Products Corp., Chicago, has opened a new office at 1405 Oliver building, Pittsburgh.

* * *

The Oldberg Mfg. Co., Detroit, producing automobile and marine engine mufflers, has moved into its 3-story plant on East Grand boulevard.

* * *

The American Distributing Co. has taken new quarters in the Book building, Detroit. It is the agency for Livingstone automobile radiators, Weideley engines, Hartford automobile parts, Liggett springs and axles and other accessories.

A calendar in our organization indicates more than merely a date.

The trademarks at the head remind us daily of our obligation to uphold the century-old traditions of our house.

They stand for the highest in service to users of steel all over the world.

CROUCH STEEL
The Sign of World-wide Steel Service

R|D &|C

ROWNSON, DREW & CLYDESDALE, Inc.
Founded—1819

HEAD OFFICE:
68 WILLIAM STREET, NEW YORK
FACTORY AND WAREHOUSES:
STAPLETON, STATEN ISLAND, NEW YORK
CABLE ADDRESS: ARDEENCEE, NEW YORK
CODES USED: A. B. C., 5th Edition,
WESTERN UNION, LIEBER'S AND BENTLEY'S

Branch Offices
SAN FRANCISCO, American National Bank Building
LONDON, E. C., 225 Upper Thames St.
BELFAST, 16 Donegal Square South
GLASGOW, 104 West George St.
PARIS, 22 Rue Bergere

REPRESENTATIVES IN EVERY IMPORTANT TRADE CENTER OF THE WORLD.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.37c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.35c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.35c
Iron bars, New York	3.37c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.45c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.65c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10, blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.37c
No. 28 black sheets, New York	5.37c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.33c
No. 28 black sheets, St. Louis	5.30c
No. 28 black sheets, St. Paul	5.595c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.72c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.68c
No. 28 galv. sheets, St. Louis	6.79c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, New York	6.80c
Bands, Boston	4.70c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c

Sheet Schedule

Black

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25

Chicago to:

Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galvanized
⅛, ¼ and ⅜-inch	50½	34
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galvanized
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½

Lap Weld

2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½

Lap Weld

2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galvanized
½-inch	20½	8½
¾ to 1½-inch	25½	13½

Lap Weld

2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN.**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$18.50 to 19.00
Chicago	18.00 to 18.50
Eastern Pennsylvania	17.75 to 18.75
Cleveland	18.00 to 19.00
St. Louis	18.00 to 18.50
Buffalo	16.50 to 17.00
New York (dealers' prices)	15.00 to 15.50
New Jersey points	14.00 to 14.50
Cincinnati	15.50 to 16.00
Birmingham	15.00 to 16.00
Valleys	16.50 to 17.50
Boston (dealers)	13.00 to 13.50

BUNDLED SHEETS

Pittsburgh	$14.50 to 15.00
Eastern Pennsylvania	13.50 to 14.50
Cleveland	14.00 to 14.50
Buffalo	12.00 to 13.00
Cincinnati	11.50 to 12.00

STEEL RAILS, SHORT

Chicago	$20.50 to 21.00
Cleveland	20.50 to 21.00
Boston (Dealers)	11.50 to 11.75
St. Louis	17.50 to 18.00
Birmingham	16.00 to 18.00
Cincinnati	15.50 to 16.00

STOVE PLATE

Pittsburgh	$17.00 to 18.00
Chicago	19.50 to 20.00
Eastern Pennsylvania	18.00 to 19.00
Cleveland	19.00 to 20.00
St. Louis	18.00 to 18.50
Buffalo	19.00 to 20.00
New Jersey points	17.25 to 18.25
Cincinnati	15.50 to 16.00
Birmingham	18.00 to 20.00
Boston (consumers)	17.50 to 18.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$22.00 to 23.00
Chicago, billet and bloom crops	21.00 to 22.00
Eastern Pennsylvania unguaranteed	17.75 to 18.75
Eastern Penna. (guaranteed)	23.00 to 23.50
Buffalo	21.00 to 22.00

SHOVELING STEEL

Chicago	$17.00 to 17.50
St. Louis	15.50 to 16.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$18.50 to 19.00
Chicago	20.00 to 20.50
St. Louis	17.00 to 17.50

BALED SHEETS

Pittsburgh	$17.00 to 17.50
Chicago	14.50 to 15.00

FROGS, SWITCHES, GUARDS

Chicago	$18.50 to 19.00
St. Louis	18.00 to 18.50
Eastern Pennsylvania	17.75 to 18.75

BOILER PLATE, CUT

Chicago No. 1	$15.50 to 16.00
St. Louis, No. 1	15.00 to 15.50

ANGLE BARS—STEEL

Chicago	$19.50 to 20.00
St. Louis	18.00 to 18.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$19.00 to 20.00
Pittsburgh, No. 2	18.00 to 19.00
Chicago, No. 1	20.00 to 20.50
Chicago, No. 2	19.00 to 19.50
Eastern Pennsylvania, No. 1	24.00 to 25.00
Cleveland, No. 1	20.00 to 21.00
St. Louis, No. 1	19.00 to 19.50
St. Louis, No. 2	18.00 to 18.50
Buffalo, No. 1	20.00 to 20.50
Cincinnati, No. 1	18.50 to 19.00
Birmingham, No. 1	15.00 to 16.00
New York No. 1 (dealers' price)	20.50 to 21.50
Valleys No. 1	18.00 to 19.00
Boston (dealers)	17.00 to 17.50

WROUGHT PIPE

Eastern Pennsylvania	$18.50 to 19.50
Eastern Pennsylvania, ungraded	11.00 to 12.00
Buffalo	15.00 to 16.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	14.50 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$21.00 to 22.00

CITY WROUGHT

New York, long (dealers' price)	$17.00 to 17.50
New York, special	14.50 to 14.75

BUSHELING

Chicago, No. 1	$18.00 to 18.50
Chicago, No. 2	13.50 to 14.00
Cleveland, No. 1	17.00 to 18.00
Cleveland, No. 2	15.75 to 16.25
St. Louis, No. 1	16.50 to 17.00
Buffalo, No. 1	14.00 to 15.00
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$11.00 to 11.25
Chicago	8.50 to 9.00
Eastern Pennsylvania	12.00 to 12.50
Cleveland	10.00 to 10.50
Buffalo	8.00 to 9.00
New York (dealers' price)	8.50 to 9.00
St. Louis	11.50 to 12.00
Cincinnati	7.00 to 7.50
Birmingham	11.00 to 12.00
Valleys	11.00 to 11.50
Boston (dealers)	6.50 to 7.00
Boston (blast furnace) (dealers)	7.00 to 7.50

CAST IRON BORINGS

Pittsburgh	$12.00 to 12.50
Chicago	12.00 to 12.50
Eastern Pennsylvania	13.00 to 14.00
Cleveland	12.00 to 12.50
St. Louis	10.50 to 11.00
Buffalo	11.50 to 12.50
New York (dealers' price)	10.50 to 11.00
Cincinnati	8.50 to 9.00
Birmingham	11.00 to 12.00
Valleys	11.50 to 12.00
Boston (dealers)	8.50 to 9.00
Boston (blast furnace)	8.00 to 8.50

IRON AXLES

Pittsburgh	$28.00 to 29.00
Chicago	31.00 to 31.50
Eastern Pennsylvania	28.00 to 30.00
Cleveland	29.00 to 31.00
St. Louis	31.50 to 32.00
Buffalo	26.00 to 27.00
Cincinnati	25.00 to 26.00

IRON RAILS

Chicago	$22.00 to 23.00
Cleveland	24.00 to 25.00
St. Louis	22.50 to 23.00
Buffalo	23.00 to 24.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	$15.75 to 16.25
Cleveland	15.50 to 16.00
St. Louis	16.00 to 16.50
Cincinnati	14.00 to 14.50

GRATE BARS

Chicago	$19.00 to 19.50
Cleveland	17.50 to 18.00
Buffalo	19.00 to 20.00
New Jersey points	16.25 to 17.00
Eastern Pennsylvania	17.00 to 18.00

FORGE FLASHINGS

Cleveland, large	$13.00 to 14.00
Cleveland, small	15.75 to 16.25
Chicago, small	15.00 to 15.50
Boston (dealers)	10.00 to 10.50

FORGE SCRAP

Chicago	$18.50 to 19.00
Eastern Pennsylvania, No. 1	12.00 to 13.00

ARCH BARS AND TRANSOMS

Chicago	26.00 to 27.00
St. Louis	23.50 to 24.00

ANGLE BARS—IRON

Chicago	$22.50 to 23.00
St. Louis	20.50 to 21.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$15.00 to 15.50
Eastern Pennsylvania	12.50 to 13.50
Boston (dealers)	7.00 to 8.00
Cleveland	15.00 to 15.50
Buffalo	13.00 to 14.00
Chicago	13.00 to 13.50

STEEL CAR AXLES

Pittsburgh	$25.00 to 26.00
Eastern Pennsylvania	28.00 to 30.00
Cleveland	28.50 to 30.00
St. Louis	28.50 to 29.00
Buffalo	26.00 to 27.00
Chicago	28.00 to 28.50
New York (dealers' price)	21.25 to 22.25
Birmingham	20.00 to 23.00
Boston (dealers)	19.00 to 20.00

SHAFTING

Eastern Pennsylvania	$25.00 to 27.00
St. Louis	26.00 to 26.50
New York (dealers' price)	19.75 to 20.75
Chicago	24.00 to 25.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh iron	$22.00 to 23.00
Pittsburgh, steel	19.00 to 19.50
Chicago, iron	23.00 to 23.50
Eastern Pennsylvania, iron	23.00 to 24.00
Cleveland, iron	23.00 to 24.00
St. Louis, iron	23.50 to 24.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	20.00 to 22.00
Boston	23.00 to 24.00
Cincinnati	18.50 to 19.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$21.00 to 22.00
Chicago, cupola	24.50 to 25.00
Eastern Pennsylvania, cupola	23.00 to 24.00
Cleveland, cupola	23.00 to 24.00
New York, cupola (dealers' price)	19.50 to 20.50
Cincinnati, No. 1 cupola	21.50 to 22.00
Birmingham, cupola	22.00 to 24.00
St. Louis, railroad	25.00 to 25.50
St. Louis, agricultural	24.00 to 24.50
Buffalo	22.50 to 23.00
Boston	23.50 to 24.50

HEAVY CAST

New York (dealers' price)	$19.50 to 20.50
Buffalo	21.00 to 22.00
Pittsburgh	19.50 to 20.00
Eastern Pennsylvania	19.00 to 20.00
Cleveland	18.50 to 19.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$16.00 to 16.50
Pittsburgh, agricultural	15.00 to 15.50
Chicago, railroad	19.50 to 20.00
Chicago, agricultural	18.50 to 19.00
Eastern Pennsylvania, No. 1 cupola	18.00
Eastern Pennsylvania, ordinary	18.00
Cleveland, railroad	18.50 to 19.00
Cleveland, agricultural	16.00 to 16.50
St. Louis, railroad	16.00 to 16.50
St. Louis, agricultural	15.00 to 15.50
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	12.00 to 12.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$22.00 to 23.00
Chicago	21.50 to 22.00
Eastern Pennsylvania	21.00 to 22.00
Cleveland	18.50 to 19.50
St. Louis	19.50 to 20.00
Birmingham	15.00 to 16.00
Boston (dealers)	13.50 to 13.75

LOCOMOTIVE TIRES

Chicago	$21.00 to 21.50
St. Louis	18.50 to 19.00

BOILER PUNCHINGS

Chicago	$20.50 to 21.00
Eastern Pennsylvania	21.00 to 22.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

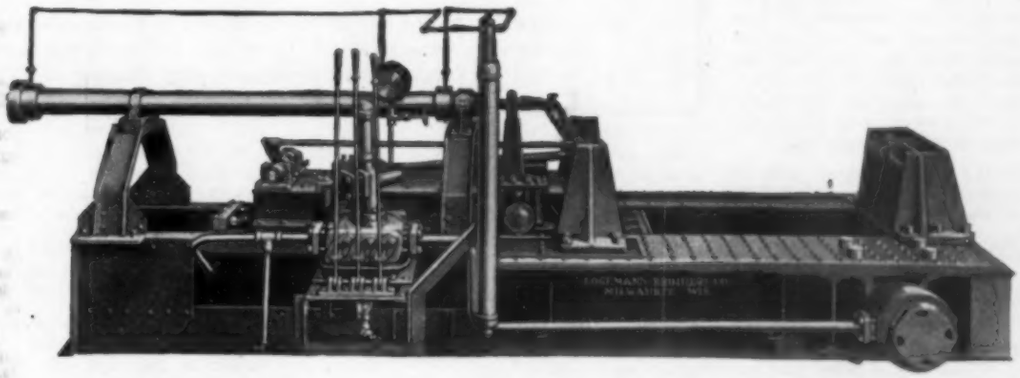
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

WELDING APPARATUS.—The Bastian-Blessing Co., Chicago, is circulating a loose-leaf catalog, in which it describes and illustrates cutting and welding apparatus. Various parts and accessories of this equipment are also described and illustated.

PRODUCER GAS COSTS—The Steere Engineering Co., Detroit, is circulating a cardboard bulletin, containing a table showing producer gas costs, including those for fuel, power, repairs and maintenance, labor and supervision, interest and depreciation, etc.

PYROMETRY CHECKING—Bulletin No. 867-B issued by the Leeds & Northrup Co., Philadelphia, contains a treatise on the importance of standards and of checking in pyrometry. Various pyrometer and thermocouple equipment is described and illustrated.

LIFT TRUCKS—The Stuebing Truck Co., Cincinnati, is circulating a cardboard folder, calling attention to a lift truck which it manufactures. According to the folder, with these trucks one man can do work formerly requiring five, as there is no waste of time in loading and unloading, due to the platforms which are part of the trucking system.

STEEL FURNITURE—A loose-leaf catalog of 32 pages is being distributed by the Angle Steel Stool Co., Inc., Otsego, Mich., in which it describes and illustrates its line of metal furniture and equipment for factory and office use. Specifications, etc., accompany each illustration. Besides metal chairs and stools, factory trucks, tool trucks, machine tenders and merchandise conveyors are described.

INDUSTRIAL HAULAGE—Under the title "The Trackless Train," the Mercury Mfg. Co., Chicago, has issued an attractive 18-page booklet setting forth the development, etc., of a tractor which it manufactures. This tractor is driven by an electric locomotive obtaining its current from storage batteries in the body of the tactor. It is designed to pull or push one or more trailers.

ALLOY STEEL—A 4-page desciptive folder is being distributed by the Kinite Co., Milwaukee, in which it describes a new alloy steel said to be especially adapted for making cutters, dies, taps and other tools with multiple cutting edges. This tool steel is cast and not forged as are others. The booklet calls attention to the various properties of the steel and contains illustrations of several large dies.

ELECTRIC DRILLS. — Portable electric drills are described and illustrated in a 4-page folder recently published by the Black & Decker Mfg. Co., Baltimore. The motor with which these drills is equipped operates on either direct-current or alternating-current of 25, 40 or 60 cycles. It is cooled by means of a centrifugal fan on the armature shaft. Drills of various sizes are described.

HEAT CHART—The Onondaga Steel Co., Inc., Syracuse, N. Y., is circulating a graphic color heat chart, giving directions for the treatment of high-speed steel manufactured by the company. The directions given are said to be applicable to all first class 18 per cent tungsten vanadium steels. Directions are given for cutting for tool lengths, forging, hardening forged tools, hardening milling cutters and finished tools, tempering and annealing.

SPIRAL PIPE—The Standard Spiral Pipe Works, Chicago, is circulating a 40-page booklet in which it describes and illustrates reinforced spiral pipe. According to the booklet this pipe is made of two strips of steel of different widths. Both strips are rolled to shape on the edges and are interlocked and rolled down under high pressure. Various data are given and the illustrations include a number of actual installations.

RAILROAD EQUIPMENT—Catalog No. 145, issued by the Whiting Foundry Equipment Co., Harvey, Ill., is devoted to equipment for use in locomotive repair shops. Equipment described includes screw-jack locomotive hoists, shop trucks, movable jacks for locomotive hoists, spur geared hauling mechanism, transfer table cranes and other equipment. Illustrations showing the various equipment at work are given.

GAS MEASURING—The accurate measurement of gases and air is treated in a 16-page booklet recently issued by the Cutler-Hammer Mfg. Co., Milwaukee. The measurement of gases and air, according to the booklet, has always presented difficulties because of variations in physical conditions, pressure, temperature, gravity, humidity, composition, etc. The booklet is devoted to the measurement of gases and air in gas, coke-oven, steel, and chemical plants.

BOILER TUBES.—Seamless boiler tubes are described in a booklet being distributed by the Standard Seamless Tube Co., Ambridge, Pa. Data given include specifications for seamless boiler tubes, as adopted by the American Society of Mechanical Engineers. The first part of the booklet is devoted to a description of the company's plant. Illustrations showing the open-hearth plant, the pouring bay, the electric furnace, a 1000-ton hydraulic press, the chipping yard and other interesting parts of the plant are given.

ELECTRIC WELDING—Electric arc-welding is treated in a bulletin recently published by the U. S. Light & Heat Corp., Niagara Falls, N. Y. The equipment described includes an arc-welder of the stationary direct-current motor-generator type; an arc-welder of the stationary direct-current converter type; a direct-current converter; a portable alternating-current motor-generator welder, with cover; an arc stabillizng reactor; electrode holder; panel for direct current motor-generator, and a direct-current motor-generator and armature for direct-curent motor-generator.

BUILDING PROJECTS.—Westinghouse, Church, Kerr & Co., Inc., engineers and constructors, New York, are circulating an illustrated folder showing actual construction work of all kinds done by the company. Some of the mechanical installations illustrated are those at the plants of the Cleveland Brass & Copper Mills, Cleveland, Freeport Sulphur Co., Freeport, Tex., mechanical handling apparatus at the shops of the Chicago & Alton railroad, Bloomington, Ill., electric power installation at the New York, New Haven & Hartford railroad, and one page of the folder shows construction of a plant step by step, which was started in May, 1917 and completed Jan. 1, 1918.

BUCKET CRANES.—An illustrated folder of four pages is being circulated by the Whiting Foundry Equipment Co., Harvey, Ill., in which bucket cranes are described and illustrated. Most of the illustrations are of actual installations and show cranes employed at the plants of the Scranton Electric Co., Scranton, Pa., handling coal; serving a cinder pit of the Western Maryland railroad at Hagerstown, Md.; handling cement clinker at the plant of Sandusky Portland Cement Co., Dixon, Ill., and handling coal in the milling plant of the Northwestern Consolidated Milling Co., Minneapolis. A list of railroads and steel plants using this type of crane and showing the capacity of each crane is given.

Opportunities Abroad

Information Can be Obtained From the Bureau of Foreign and Domestic Commerce. Requests Should be on Separate Sheets and Should be Accompanied by Opportunity Number

The purchase of steel, iron, metal sheets, black galvanized tin, foundry, hematite and malleable iron and steel for files and other tools is desired by a firm in England. Opportunity No. 29775.

A firm in Tunis desires to purchase calculating machines, typewriters, cash registers, numbering machines, etc. Opportunity No. 29781.

Saws, files, tools, builders' hardware, industrial hardware, screws, etc., are required by a firm in Spain. Opportunity No. 29713.

Cotton spinning and weaving machinery, 50 looms, one spooling machine of 200 spindles and one winding machine of 120 spindles, are required by a firm in India. Opportunity No. 29673.

The purchase of supplies for logging, such as wire rope, tree felling machines, motors, stump pullers, etc., is required by a company in Finland. Opportunity No. 29672.

A manufacturer in Argentina desires to purchase machinery and accessories necessary to install a plant for the manufacture of oleomargarine. Opportunity No. 29669.

The purchase of machinery for the manufacture of porcelain insulators is required by a manufacturer in Brazil. Opportunity No. 29666.

The purchase of tubing for high pressure turbines and electrical machinery of all kinds for developing waterfall power, is desired by a firm in a consular district in Spain. Opportunity No. 29741.

A firm in Denmark desires to purchase machine tools and other equipment for building a shop to make motorcycles. Opportunity No. 29743.

Engineering and building materials, such as iron, steel, metals, heavy hardware, machinery, electrical supplies for light, heat and power service, and for telephone and telegraph service, are required by a firm in Norway. Opportunity No. 29748.

A manufacturer in Italy wishes to secure an agency for the sale of iron, lumber, steel, coal, etc. Opportunity No. 29751.

A firm of manufacturers' agents in England desire to secure agencies for the sale in South Africa of hardware, motors and accessories, wire rope agricultural machinery, etc. Opportunity No. 29753.

The purchase of ice cream utensils is desirel by a firm in Wales. Opportunity No. 29755.

The municipality of a city in Greece desires to receive proposals until Sept. 11, for the installation and operation under contract for a period of years, of an electrical plant to furnish light and power to the city. Opportunity No. 29759.